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ABSTRACT

This report on Switzerland is one in a long-established series of educational policy reviews conducted and published by the Organisation for Economic Co-Operation and Development (OECD). The report is divided into three parts. Part 1 "The Examiners' Report," describes and discusses the education system in 6 of the 24 Swiss cantons (districts), raises issues, and identifies policy options. Part 2 provides a summary record of the review meeting that took place during the proceedings of the Education Committee of the OECD when the Swiss delegation replied to detailed questions from the examiners and committee members. Part 3 summarizes the authoritative two-volume Background Report prepared by the Swiss Conference of Cantonal Directors of Education in advance of the examiners' visit to Switzerland. (DB)

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SWITZERLAND

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OECD

REVIEWS OF NATIONAL POLICIES FOR EDUCATION

SWITZERLAND

ORGANISATION FOR ECONOMIC CO-OPERATION AND DEVELOPMENT

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- to contribute to sound economic expansion in Member as well as non-member countries in the process of economic development; and
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FOREWORD

This first report on Switzerland is one of the long-established series of *Reviews of National Policies for Education.*

It is divided into three parts. Part One, the Examiners' Report, describes and discusses the education system in six Swiss cantons, raises issues and identifies policy options. Part Two provides a summary record of the review meeting that took place during the proceedings of the Education Committee when the Swiss Delegation replied to detailed questions from the examiners and Committee members. Part Three summarises the authoritative Background Report in two volumes prepared by the Swiss Conference of Cantonal Directors of Education in advance of the examiners' visit to Switzerland.

The rapporteur was Mr J.J. Silvestre (France) and the examiners were Mr W. Clement (Austria) and Mr W. Laeng (Italy).

This volume is published on the responsibility of the OECD Secretary-General.

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Paris, 23 April 1990

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We were very honoured to be approached by the Organisation to analyse the education situation in Switzerland. The culture and dynamism of this country and the very great complexity of its political decision-making structures, the fruit of history and of subtle compromise, appeared as so many obstacles but also as stimuli to a positive reply from people foreign to Swiss circles.

It is for our readers to judge whether we were able to meet the challenge and have succeeded in penetrating, be it ever so little, into what had hitherto not always appeared very clear to Switzerland's partner countries. These — most understandably — would like to know a little more about what might help explain "Swiss success", i.e. a socio-economic dynamic based on a certain type of "production of skills" at various levels.

This does not mean however that this — somewhat hazardous — exercise was based entirely on a request for clarification from outside. There was indeed a spontaneous approach by the Swiss authorities to the OECD for the latter, through the opinion of its examiners, to aid the various authorities concerned with education and training in Switzerland to:

1. verify certain of their diagnoses and assumptions;
2. consider key questions from different angles;
3. identify new long-term trends in Swiss society and in the world surrounding it which might lead to having to rethink the very conditions of "piloting" the system.

Our group of examiners was in fact composed so as to approach a linguistic and cultural balance and specialisation corresponding as closely as possible to the problem of education in Switzerland, but the splitting of the group to visit different regions did not always make it possible to do justice to all the excellent things or ideas found in one region or another.

It goes without saying that a first examination of this type could not encompass the entire reality of the operation of the education and training system in Switzerland. Therefore, by common accord between the OECD Secretariat and the Swiss authorities concerned, the university and adult education sectors were left aside. Neither could two weeks of visits, even though numerous and varied, suffice to tackle and master all the ins and outs of the system. Certain of its components were therefore left aside rather than risking a superficial treatment. For this reason, it was agreed at the outset with the Swiss authorities concerned that the report would deal with the problems of education in Switzerland in general and not solely in the six cantons visited by way of a sample. References of differing import will therefore be found not only to the situations in these cantons but sometimes also to those that may be found in other cantons.

In any event, this examination should be accepted for what it is: a framework for reflection offered to the Swiss decision-makers, but for which the authors alone are responsible. Certain proposals will appear to some to be *déjà vu*; to others to be too innovative in the present state of opinion or the wishes of the partners concerned; and finally to others again as "guiding Utopias", likely to orient decisions only in the very long term, if at all. What we hope is that a broad debate will grow up around some of the ideas put forward in this report, in order that decisions of importance to the future of the country — for any decision of note affecting education and training has a direct or indirect effect on the society — can be taken with full knowledge of the facts.

It remains for us to thank very warmly those who gave us particular help in our task. The task of organising both our background information and our stay in Switzerland fell to the Secretariat of the Conference of Cantonal Directors of Public Instruction (CDIP). We found the Background Report, drafted by the CDIP Secretariat and sent to us well before our visit, very useful, both for guiding our visits and for improving our knowledge of Swiss problems. We would like to stress the frankness of the dialogues that developed on the spot. We were struck by a very great capacity for self-analysis, if not self-criticism, on the part of all our interlocutors, which makes us all the more optimistic for the future.

Finally, we want to repeat here how delighted we were with the welcome we received by those representing the various authorities at national and cantonal level, in the regional capitals and in the institutions, including schools. We were thus able to appreciate the traditional Swiss hospitality, refined gastronomy coupled with stimulating museum visits. Travelling about the country also enabled us to admire, on many occasions, the impressive work of taming a natural landscape, magnificent but difficult, undertaken by the inhabitants over the centuries. Judged by this standard, our study will appear all the more modest, but then the nation itself was built little by little.

It remains for us also to thank the OECD Secretariat for the help given in framing this exercise, including bringing to our notice the most instructive findings of other types of examination from which Switzerland has recently benefited.

The Examiners

INTRODUCTION

Switzerland has always participated actively in the work of the OECD in the field of education, but only recently did it undertake to be the subject of an educational policy review. The main reason for this delay is to be found in the highly decentralised structure of the education system and the absence of any supra-cantonal body with policy-making authority and administrative and executive powers. As the examiners put it, "Education in Switzerland still remains a mosaic, each element of which has a more or less autonomous life". The universities and adult education agencies were not directly considered and the examiners' visit was confined to no more than six of the twenty-six cantons, although these were treated as a representative sample to illustrate issues and trends throughout the country.

In their report the examiners point out that their aim is to provide "a framework for reflection to the Swiss decision-makers". Some of their proposals, they say, will appear familiar to Swiss educators whereas others may be thought ambitious given the present state of public opinion and the priorities of the authorities controlling and managing education. They hope, nevertheless, that their report will give rise to a constructive debate within Switzerland and at the same time help explain to other OECD countries the dynamics of an education and training system that is insufficiently known but that has contributed to a remarkable level of economic prosperity and social as well as cultural cohesion.

There is no federal ministry of education but some responsibilities are attributed to the Swiss Confederation. Essentially, each canton reigns supreme over its own provision for education and training, including teacher training. Indeed, "the cantons consider their sovereignty in educational matters as a vital element in their political and cultural identity". What is surprising is that, at the cantonal level, the direction and management of education and training are very complex and many actors are concerned. The distribution of responsibilities is above all the result of historical factors and does not always correspond to an internal logic. On a number of occasions, proposals for changes considered desirable in the public interest and carefully prepared have been rejected by direct popular vote. In addition, the partnership system, which is particularly well developed in certain areas, has not always produced the results that were expected and has tended to block what were regarded as essential measures.

The field of vocational training aptly illustrates the subtle and traditional equilibrium between three entities : Confederation, cantons, enterprises and trade associations. In accordance with the spirit and functioning of the Swiss legal system, these entities do not exclude one another, but are called upon to collaborate in making full use of their complementary competences.

After having successively reviewed pre-primary and primary levels, the lower and upper secondary school and the dual system, the examiners focus their attention on some major issues for the future.

Education and training in Switzerland still appear to be compartmentalised in terms of their structures and methods of operation. In particular it is noticeable that there is very little exchange between general and vocational studies, which for the most part take the form of alternate classroom and on-the-job instruction. The difference is reflected in the composition of the teaching staff. In general, there is a lack of mobility in the teaching force owing to the non-transferability of qualifications among cantons.

The examiners therefore recommend greater co-ordination at the national level in order to respond to the shortage of qualified manpower and the challenge of the single European market after 1992. They also recommend strengthening the statistical base and research and development capacity with a view to improving the decision-making process at the local, cantonal and national levels.

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Part One

THE EXAMINERS' REPORT

Chapter 1

THE CONTEXT OF THE EXAMINATION

Recent Swiss and OECD reports

The Swiss authorities' reluctance to request an examination of national educational policy is explained by various reasons, one of which goes far back in time. The Organisation for European Economic Co-operation (OEEC) was created in 1948 to distribute the aid that the United States was prepared to grant under the Marshall Plan if the European countries agreed to co-operate to solve their problems. As Ambassador Jean Zwahlen perceptively stated, "thus was born the multilateralism that had the advantage of allowing the simultaneous examination of essential and interdependent aspects of the problems through assuring a unity of place and time as regards information, consultation and decision"[1].

Switzerland nevertheless hesitated to engage itself in this new form of international co-operation. It had not suffered as much from the war as the other European countries, and its policy of neutrality did not incite it to join an economic or political bloc. Finally, the Swiss authorities decided to join the OEEC but with a reservation concerning the maintenance of the country's traditional neutral status, a reservation that was reiterated when signing the Convention relating to the Organisation for Economic Co-operation and Development (OECD) which took over from the OEEC, with a broader mandate, in December 1960.

With regard to its particularly remarkable performances in the economic, social and cultural fields within the industrialised countries, which will be briefly resumed below, Switzerland was justified in asking itself a similar question to that of 1948: is close co-operation in educational matters necessary with the OECD, including in the form of an examination of its education system? It should be recalled here that the flexibility of the Organisation's mandate enabled it to extend the range of its activities beyond what had originally been undertaken in the early 1970s, to include the field of education. The increasingly complex development of Western societies often argues in favour of transversal, cross-disciplinary approaches. The retrospective or prospective examinations of a particular sector (the economy, scientific and technological policy, social policies, etc.) can be of significance only if they integrate an analysis of complementary and closely related sectors.

Thus Switzerland, like the other Member countries, is regularly the subject of an OECD economic policy analysis. The latest of these refers several times to the problems of education and training in the broader context of the present tensions on the labour market, the consequences of the ageing of the population and public finance equilibrium[2].

In a field closer to the problems of education and training such as science, research and technology policies, Switzerland also wished this type of "participatory audit" that an OECD review of national policy constitutes. Thus, as early as 1971, the OECD devoted a report to Swiss scientific policy, describing and analysing the place and role of action in this field in national policy and the evolution of the institutions concerned up to the end of the 1960[3]. It is perhaps in this report that the first presentation is to be found — at the international level — of the problems associated with scientific and technical staff and the redefinition of the tasks of the university system. This examination soon followed the creation of the Federal Science and Research Office. A new report on Swiss science and technology policy was recently published, following the analyses carried out in 1988 and the review meeting held in Berne on 3rd March 1989[4]. This report logically enough discussed the place occupied by higher education, in particular the universities and technical colleges, in technological research and training.

In view of its own needs and its possibility of contributing, Switzerland has regularly participated in the work of the Education Committee, then in that of the Centre for Educational Research and Innovation (CERI). It is in fact in the context of the activities of this Centre that the Swiss authorities, at cantonal or intercantonal level, were submitted for the first time to kinds of "mini-examinations" not directly concerned with a component of national policy. Reflecting here the federalist spirit, still particularly strong in the field of school policy, as will be shown in this report, certain cantons requested opinions on innovative policies or special educational institutions, in accordance with CERI's mandate.

The first exercise of this type, which was also a "first" for CERI, was organised on the initial pattern of the national policy examinations. It consisted in analysing the functioning of the *Institut Romand de Recherche et de Documentation Pédagogiques* (IRDP), and making any suggestions for its development on the occasion of the retirement of its director. The interest of the initiators of this enterprise can by gauged by the fact that the new director wrote a note on the initial effects of this evaluation[5]. What is more, this examination prepared the way for other analyses of this type in the framework of the CERI programme.

The second special evaluation exercise in Switzerland was carried out at the request of the Education Department of the canton of Ticino. At the beginning of the 1980s, this department was concerned about the level of recruitment and training of teachers. It therefore requested CERI's advice, which was delivered in the form of the participation of experts and representatives of the Secretariat in study days at the renovated teacher training college. On this occasion, it could be seen that teacher training in non-university higher education corresponded well with the general trends and the conclusions to which the Organisation had come during the 1970s.

All in all, taking into account the political and practical limitations on the systematic participation of all the components of a country with a federal structure in the work of an international organisation of an intergovernmental nature, the Swiss contribution to the "education and training" activities of the OECD has been far from negligible. And one of the best examples is provided, despite the difficulty in collecting basic data, by Switzerland's regular contribution to the annual educational statistics and its present participation in the CERI project on educational indicators.

Since the Swiss authorities have thus never distanced themselves from the reflections and exchanges of ideas on the evolution of education and training systems in the industrialised countries, it was therefore only natural that one day they should turn to the exterior to pursue their questioning of the evolution of their different cantonal education systems. The authorities concerned could not in fact remain insensitive to two striking phenomena: first, the development of co-operation and in particular the mobility of human resources in Europe, and second, the essential role of raising the level of skills in the period of structural adjustment now being experienced by the industrialised countries.

The context of this review: Switzerland's new approach

The Swiss authorities participate to a large extent in international scientific, technological and cultural co-operation. In a world where interdependence is constantly increasing, in Europe in particular, Switzerland derives considerable advantage from this co-operation and wishes to pursue it, and even increase it in coming years. At the purely European level, Switzerland already participates in applied research projects (such as ESA, COST, ESPRIT, EUREKA, etc.) and hopes, together with other non-EEC countries, to be involved in the future either in existing programmes or in new projects[6]. It is only thanks to Switzerland's membership of the European Space Agency (ESA) that Swiss industry has really been able to participate fully in research and development activities in the space sector.

The confederal responsibilities with regard to scientific policy, the desire of Swiss enterprises, sometimes multinational by vocation, not to cut themselves off from R&D in complex fields of technology, and perhaps the understandable interest of certain European partners, have all favoured this co-operation. Rather paradoxically, it has not been the same for education, even though indirectly — and sometimes very directly at the higher education level — research, training and technological innovation are connected. This resulted, for example, in the refusal until 1989 to ratify the education conventions of the Council of Europe, of which Switzerland is a member.

To remain at the level of Europe in the broad sense (the European Community and member countries of the European Free Trade Association), the mobility of labour, induced either by treaties or by the mechanical consequences of economic and commercial and even cultural exchanges, almost necessarily implies three elements of co-operation:

1. In-depth knowledge of the quantitative and qualitative nature of the "production" of the various skills in forms as standardized as possible;
2. On this basis, a prospective analysis, as broadly based as possible, of the necessary evolution of these skills in the light of society's long-term needs and the policies, strategies and methods that will enable them to be fulfilled in different national contexts;
3. The introduction, as required, of concrete multinational co-operation measures in order to favour this co-operation in precise priority fields, including the mutual recognition of diplomas and/or skills.

The prospect of 1992, with greater European integration and the need not to cut the country off from this pole of economic and social development, has certainly played a vital role in changing the Swiss authorities's attitude to international co-operation in the field of education. Not only is the question of the signature of the Council of Europe conventions back on the agenda, but the Swiss authorities have also definitively accepted that an "outside opinion", that of the OECD, should be sought on the functioning of their education system. It in not without interest, on this occasion, to stress a certain acceleration, notably at European level, in programmes and plans for exchange and co-operation. Notwithstanding the considerable reluctance to recognise the existence of a Swiss system of education and training, the authorities responsible for education have been forced at different levels (federal, intercantonal and cantonal), indirectly to accept this reality in the context of Switzerland's necessary inclusion in the European framework. It is thus via the detour of international co-operation that the concept of a supra-cantonal education system has started to emerge.

A new opportunity for co-operation at the European level is now open to Switzerland with the introduction of European Community programmes less oriented towards research and technology. At their meeting in May 1989, for example, the Ministers of Education decided that the

Commission of the European Communities should enter negotiations with the member countries of the European Free Trade Area (EFTA) to enable students from these countries to take part in the COMMETT II Programme aimed at promoting co-operation between universities and enterprises. In December 1989, the Swiss government decided to participate in the programme through contributing SF 2.7 million.

At the end of their meeting of 14th December 1989, the Ministers of Education of the Twelve adopted the second phase of the Community's ERASMUS programme (for the exchange of students between higher education institutions) which will also be open to EFTA countries. It should also be mentioned here that the Ministerial Council of the six EFTA countries on 12th December 1989 expressed the wish to see negotiations opened in 1990 on a European Economic Space Agreement bringing together 18 Western European countries. In the words of those concerned, this potential bloc-to-bloc agreement would permit: "the fullest possible realisation of the free circulation of goods, services, capital and persons in horizontal policies like education, the environment, research and development, and the social dimension".

The relative conservatism that had prevailed earlier had brought about initiatives in certain cantons for co-operation with the regions of neighbouring countries aimed at opening up to the outside world, and implying the analysis and comparison of the functioning of various educational, training and research institutions. The narrowness of the Swiss labour market, the need to participate in the progress of R&D in certain industries, or even natural attraction on the cultural level, have also helped to provoke a thaw in thesituation now justifying an overall review and a national framework for action that will make these regional co-operation attempts more coherent.

The preparation of a Background Report

During the discussions between the Swiss authorities concerned and the Secretariat on the practical details of this review, the problem immediately arose of the actual field to be covered by the evaluation. The complexity of management of education and training systems inherent in any federal structure led to agreement that the framework of a first review should be limited to the school system and vocational training, leaving higher education aside.

It was nevertheless understood that higher education would be indirectly covered when dealing with questions such as the link between secondary and higher education; teacher training; educational R&D and the development of vocational, non-university higher education as the follow-on from secondary vocational education and in relation to the requirement for highly skilled labour. But in order to have an overall view of the system, it was necessary that this level of education should be described, and the Swiss Background Report (volume I) meets this need.

In addition, the Background Report and the report by the examiners of national science and technology policy and the record of that particular review meeting each contain a section devoted to higher education and its different components, in particular university education. Even though the analysis is more specifically oriented towards the problems of research and technology transfer, it nevertheless supplements this review of education in Switzerland and makes it possible better to understand the overall functioning of the system.

As the examiners were able to see on the spot, drafting a background report is no easy task in a country where the authorities concerned with the management of education systems are numerous, varied and sometimes more distant from one another than might be imagined. Ideally, examiners hope to read a study that is not only descriptive, but also self-analytical and if possible critical. The authors of the report qualify it perhaps too modestly as "essentially descriptive".

The fact is that in the report, the drafting of which was entrusted to the Secretariat of the Conference of Cantonal Directors of Public Instruction (CDIP), which gives it a certain unity of style, there are some very interesting pointers as to the problems, questions and possible solutions concerning education in Switzerland.

It is true to say that it would not be possible to start talking straightaway about "Swiss education" as an entity. Education in Switzerland still remains a mosaic, each element of which has a more or less autonomous "life". As a result, the preparation of this review could not ignore the particular responsibility of the cantons in this field, or the cultural, linguistic and institutional differences. Nevertheless, this concept, difficult to identify in reality, does have a certain consistency that can be seen in some common features of organisation and functioning at different levels of the education system.

However, it would not have been possible to take into consideration the particular situation of the 26 education systems in Switzerland, so it was decided to select, both for the descriptive analysis appearing in volume II of the Background Report and for the examiners' visit, a sample of six cantons, as representative as possible: Zürich, Uri, Ticino, Valais, Neuchâtel and Aargau. The cantons selected (apart from Neuchâtel) are located about a central geographical axis, thus giving a picture of the whole that is at one and the same time faithful and distorted. For example, the "peripheral" cantons in the East (Grisons, Sankt Gall, etc.) and the West (Genève, Vaud, etc.) are not represented, but so far as possible direct or indirect allusion is made to their situation in the course of the review. It is mainly the linguistic and cultural particularities that are highlighted in this sample. The examiners were specially conscious of the richness of this confrontation. Although it meant splitting the team of examiners during the visits, this confrontation of information and arguments gathered from bodies, some of which are located at the "centre" and others on the "periphery", turned out to be particularly fruitful.

The cantons studied

The summary of the Background Report in Part Three of this volume describes in detail each of the cantons studied. Here, the examiners provide no more than a brief thumbnail sketch of the six cantons.

The canton of Aargau

This canton occupies a central position in the Swiss communications system, almost at the centre of the Swiss plateau, at the confluence of the main rivers that flow down from the Alps, in a linking position between Bern, Zürich and Basel, crossed by the country's main railway lines and motorways. It is the barycentre of the Swiss industrial triangle whose angles are Basel, Luzern and Winterthur, to the East of Zürich.

This is the third German-speaking canton in our sample, open to all influences, of protestant tradition (even though the Catholics are in the majority), German-speaking but with a substantial foreign population mainly of Italian and Spanish origin, very different from Uri, a mountain canton, and Zürich, a very urban canton. Aargau is neither completely urban nor completely rural: the splendid green countryside, well tended and densely populated, which stretches below the Jura, is present everywhere but it is not really an agricultural region. There is also a dense network of urbanised and industrialised settlements well integrated into the countryside and taking full advantage of the richness of the means of communication. One may live in the capital, Aarau, but work or study in Zürich, Berne or Basel.

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The canton has roughly the same area as Zürich, but only half the population, half a million people. However, Aargau must be counted among the most important cantons, despite the absence of any large conurbations. It is thus a canton with no true centre, of substantial size, mainly industrial (precision engineering and optics), which is not a banking centre, not a tourist region, but one of the richest cantons. It is a particular Switzerlandone meets here, not too traditionalist, dynamic, but a little concerned and asking questions about its future.

The education system is the traditional one found in the German-speaking cantons, i.e. five years of primary school followed by the secondary I cycle with three separate sections: practical classes for the less academically gifted, the secondary school, and the district schools (of which there are 45) with high academic requirements. Selection has been made less rigid and is now on the basis of the teacher's recommendation. There is no trace here of the single middle school or orientation cycle. All the secondary I courses last four years. They are followed by the *Gymnasium* on the one hand and vocational training on the other, with a limited range of full-time vocational schools. The socio-pedagogic *Gymnasium*, created in 1976 to replace the teacher training college, is a rarity in Switzerland as regards both its purposes and its operation.

The canton has no university even though it has the resources to manage one. In the 1970s, an attempt to create an institute of higher education for the education sciences failed after the project, very innovative, was rejected by the Federal Council in 1979. The failure of the university of Aargau illustrates the strength of the sceptical attitude towards the development of academic culture, and reticence towards ambition and intellectual adventure, which is not peculiar to this canton as similar projects in both Luzern and Ticino have suffered the same fate at some time or other. It may well be asked whether it is still possible to modify and extend the university system in Switzerland. In line with its industrial vocation, the canton manages a number of important post-secondary colleges (an engineering college, one for educators, a Swiss construction college and a higher school for business and administration run jointly with the neighbouring canton of Solothurn).

The canton of Neuchâtel

This is the only entirely French-speaking canton among the six visited by the examiners. Situated in the west of the country, in an enviable position on the slopes of the Jura, mid-way between Lake Geneva and Basel, Neuchâtel is geographically apart from the other cantons included here. This difference is not only geographical but also cultural and economic. Neuchâtel has a specific nature that distinguishes the canton in several respects: it is French-speaking but very open to the German-speaking world (before it joined the Confederation, Neuchâtel was a Prussian principality), protestant, mountainous but industrial.

Despite its enviable position — the vineyards above the Neuchâtel Lake and the villages that dot its shores have an undeniable charm — the territory of this canton is far from offering easy living conditions: the Jura mountain chain, which forms a barrier rather than an opening to France, is windswept and the temperature can fall very low, it freezes and the soil is arid, lean and little suited to agriculture. The fact is that this canton — both the high country and the low — reached an enviable level of prosperity thanks above all to watchmaking and precision engineering. Towns like La Chaux-de-Fonds, an astonishing worker town in the middle of the Jura massif, and Neuchâtel, more bourgeois and better favoured than its rival, are world-famous centres in this industry which exports virtually all its production. The level of skills required by watchmaking, and the need to co-ordinate research, production and marketing in order to hold their own against foreign competition, oblige the people of Neuchâtel to be open to the outside world and not to rest on their laurels. The recipe worked very well until the 1970s, when it was thought that the solution for staying at the top level of world production had been found and there was therefore no need for any further change in a system that worked so well. However, the system suddenly fell apart under the onslaught of Japanese and American production. It was a rude awakening and the canton was plunged into an economic crisis. It was necessary to close many factories and thousands of highly specialised workers were made redundant. They were so to speak the elite of the Swiss working class, envied by the whole world for having been able to obtain very advanced working conditions as compared with other sectors of the productive apparatus. After an unparalleled research, technological innovation, restructuring and co-ordination effort, the watch industry was able to start up again, invent new, high-performance products, use new materials and win back a place among the world leaders.

This spirit of openness is also found in the cultural institutions: despite its small size (a total population of 160 000) the canton has a good university with poles of excellence in several faculties, an ethnological museum which is a little jewel, and it is the headquarters of the Swiss watchmaking research laboratory and the watchmaking electronics centre. Leading-edge industry is part of Neuchâtel's nature, as is openness on the demographic side: 18.6 per cent of the population are foreigners. The foreign presence is to be seen everywhere, at all levels, from the academic body of the university to the farmers in the Jura.

This fascinating framework is in many respects a challenge to the education system, which has to juggle with multiple parameters and come to terms with opposing thrusts (tradition and innovation) in unstable equilibrium.

The structure of the education system is as follows: the average number of pupils per class is 17-18 in primary schools (5 years) and 19-20 in secondary I which lasts four years: one orientation year and three years of secondary I education proper.

After the orientation year, secondary I splits into three parallel sections:

i) The classics or science pre-gymnasium stream, leading to: *maturité*; the *maturité* section of higher schools of commerce; the canton's ETS engineering school.
ii) The modern stream which gives access to the full-time vocational schools (schools of commerce, diploma schools, technical schools) and to the dual system.
iii) The vocational section that leads to various apprenticeships.

Neuchâtel is one of the cantons with the highest proportion of *maturités* in Switzerland.

The proportion of full-time vocational schooling is also substantial (1 100 pupils as against 3 600 apprentices). There are 2 100 students at the university.

The orientation year is a very recent innovation (1987/88). Classes are held by two principal teachers assisted by specialist teachers. This orientation system gives much more responsibility to the teachers than did the former system. Orientation is based on three parameters: the results obtained in cantonal examinations; annual average marks; and the teachers' opinions.

In 1987/88 orientation to the different sections was as follows: 42 per cent of pupils went on to the pre-gymnasium sections; 25 per cent to the modern section; 33 per cent to the vocational section.

In post-compulsory schooling, there are 3 000 pupils in gymnasiums and schools of commerce, 1 100 in the full-time technical schools, and 3 600 apprentices. There are 350 students in the engineering school and 2 100 in the university.

Mention should be made of a special feature of the Neuchâtel school of commerce, which by tradition has always been a centre where foreign students have come to study French. Thus, of the total student body of almost one thousand, 450 are not native French-speakers.

The canton of Ticino

Ticino, the only Italian-speaking canton (though there are one and a half times as many Italian workers in other cantons) has natural frontiers that are more difficult to cross in the direction of other Swiss cantons than in the direction of Italy, where the frontier is open and scarcely any more than an imaginary line. The cultural and economic influence of the bordering Italian regions (Piemont and Lombardy in particular) is very strong. The mother tongue of the inhabitants is made up of Lombard dialects which are spoken in everyday life, rather than standard Italian.

Despite the geographical, cultural and linguistic links with the neighbouring Italian world, the people of Ticino see themselves as being very much Swiss. Their pride as a mountain people has oriented them more towards the community of Rhaetian peoples than towards the Duchy of Milan, a powerful but dangerous neighbour, and the subject of endless disputes between Austria, France and Spain. Communications with the interior of Switzerland were recently made very much easier thanks to the construction of the Gothard motorway tunnel. There is now a Ticinese in the government of the Confederation, and the presence of Ticinese at the highest level, in the Federal Council and in the federal administration in Berne, is characteristic of, and one of the things that makes, Swiss federalism.

Over the last forty years, the population of Ticino has increased by 60 per cent, from about 175 000 to a present total of 280 000. The active population, once made up of farmers and graziers, is now mainly engaged in the secondary and tertiary sectors. Since the 1960s Lugano has become a European banking centre, the third biggest in Switzerland.

School development aims to meet the challenge of economic and social development. There is a total of about 50 000 pupils and some 4 000 teachers. There are 6 600 children in kindergartens, 14 000 in primary schools, 16 000 in secondary I (now *scuola media*), 5 600 in secondary II, of whom 2 000 in the gymnasium, about 1 000 in other schools (schools of commerce, diploma schools, and *post-maturité* teacher training colleges), 1 600 in full-time vocational schools and a total of 7 200 in apprenticeships. Students at this level attend their courses in other cantons, with the aid of grants, or in Italy.

A milestone in educational innovation was the school reform of 1958 (a new school law was voted by the Ticino parliament at the beginning of 1989 after fifteen years of discussion and preparatory work). In 1974 the new *scuola media* was created to replace the old popular primary schools and the elite schools characteristic of a treadmill model of schooling also found in many other countries and in the majority of Swiss cantons, but which Italy had already abandoned at the beginning of the 1960s. In 1986, the training of pre-school and primary teachers was transferred to the *post-maturité* level. For some years now the pupils and students of Ticino have had the shortened week, with no classes on Saturday. Much effort has also been made to introduce the teaching of a first foreign language (French) into the primary school curriculum as from the third year. There is no doubt that the reforms in Ticino have been influenced by the educational debates going on in Italy. Some of the innovations are considered "audacious" by other, more conservative, cantons, which see in them a tendency to make courses easier, an irresponsibility and laxity, quite out of line with the rigour that will continue to be practised elsewhere. But the Ticinese are convinced they have taken the right road: Genève had preceded them and now Valais is changing the secondary I cycle to a direction similar to that of Ticino.

The canton of Ticino, like Valais, Uri and Aargau, does not have a university centre. The lack of a university in Italian-speaking Switzerland is much regretted in intellectual circles, but an attempt to create a university with the support of the Confederation failed a few years ago, the proposal having been rejected by the sovereign people.

The canton of Uri

The example of this canton is particularly characteristic of the specific nature of Swiss educational policy. There is no doubt no other country in the world where, while respecting historical tradition, a highly organised educational landscape has been preserved and developed for a regional entity with scarcely 35 000 inhabitants. A foreigner's normal reaction would probably be to propose a transfer to a bigger regional entity — Luzern for example — the main functions of the canton as regards educational policy. In Swiss eyes, such a proposal would amount to a case of *lèse-majesté*.

Of particular interest from the standpoint of international comparison are the reasons for an autonomous educational policy, even for a canton whose economic capacity, as measured by regional income, is a little under one billion Swiss francs, at the bottom of the Swiss scale.

First, some indications concerning the organisation and level of development of the education system in Uri:

- As regards the politico-administrative aspect, the canton naturally has a complete structure corresponding to a cantonal parliament (*Landrat*) and an executive body (*Regierungsrat* or council of state) under which comes, among others, the "Director of Education as a member of the government". The education directorate is assisted by an "educational council" which acts as a consultative body. The Education Directorate has a complete administrative structure, with, for example, its school inspectors, its vocational training service, professional advisory service, etc.
- The structure of the teaching establishments in the canton is very developed and includes all types of school up to the *maturité* level. In this connection, the high geographical density of establishments should be stressed. The small size of a commune is not considered a sufficient reason for depriving it of its kindergarten and primary school. The small size of the canton is on the contrary a challenge to be accepted and an incentive to set up a highly structured system of establishments.

At the centre of Uri's educational policy is the concept of "local planting of school development" (development centred on "the grass roots"), taking the form of close collaboration between communes and school authorities, parents and teachers, school and church, school and enterprises, teachers being very much available for continuing education, etc.

The implementation of this policy implies the strict application of the principle of decentralisation and subsidiarity. Each service is provided at the lowest possible level of responsibility, on the basis of a highly personalised, tailor-made teaching. The higher echelons of authority are called upon only when needed. This results in personal commitment and a very high sense of responsibility on the part of all actors at all levels in the system. The professional ethics that inspires them is very noticeable.

In the eyes of the authorities, these principles should make it possible to achieve the greatest possible equality of opportunity and the maximum exploitation of talents.

There are nevertheless a number of difficulties and problems that cannot be ignored. One, though of lesser importance in the final analysis, is the high cost of this system: SF 34 million for 34 000 inhabitants. The expenditure is more than justified, however. As compared with other cantons, Uri is disadvantaged as regards attracting economic establishments. It is not fiscal advantages but the high quality of the non-physical factors of production that constitute its biggest asset. Economising on education in this canton would inevitably lead to greater social inequality, immigration, and, in the longer term, pauperisation.

Despite the considerable investment, it has to be said Uri's level as far as the higher cycles of schooling are concerned is rather poor. The *maturité* rate in this canton is below the average for the country, and there is a considerable "brain drain" for higher qualifications.

For this reason, teachers and school authorities are faced with difficult choices that will have to be made for the future. The system of "global evaluation of pupils" and "promotion without examination" to the next level places a heavy responsibility on the teaching body. In itself, this risk to orientations could be alleviated by greater integration of the different types of school up the 9th year. This model would offer a (common) basic training with marginal differentiations. But this would conflict with the desire to maintain a maximum number of establishments in the communes, as it cannot function with establishments with too few pupils. One might therefore consider another solution for orientation strategies that would make it possible to delay the decisions. It should also be noted that an integrated cycle for the 7th to 9th years would involve changes in teachers' status.

As regards vocational training, it is simply impossible to adapt the confederal regulations to the situation of this canton. The canton has the good fortune to have three excellent large enterprises on its territory, some of world renown in their field. Although it is possible to choose between 100 different trades officially recognised by the OFIAMT (*Office fédéral de l'industrie, des arts et métiers, et du travail*) in the canton, a high proportion of young people nevertheless do their apprenticeship outside. Similarly, *post-capacité* examinations have to be taken outside the canton. What is more, the canton has no ETS (higher technical school), but it has an agreement with the other cantons of central Switzerland to manage the Luzern ETS. This solution also exists for other higher-level schools. To obtain a first class vocational training it is necessary to leave the canton, and once the apprentices are qualified, they tend not to come back. The vocational training advisory services in Uri, excellent though they may be, have their hands tied.

Summarising, it can be said that the canton of Uri is particularly representative of the Swiss virtues: attachment to the local reality (*Heimat*), decentralisation, self-responsibility, tenacity, innate capacity for innovation, openness to international trends, resistance in the face of economic fluctuations, social commitment while respecting individuality. Such are precisely also the elements constituting educational policy. This being so, any evaluation based on foreign models of education has to be undertaken with extreme caution.

The canton of Valais

The canton of Valais is situated in the heart of the Alps, in the south of Switzerland. It has 163 communes with a total of almost 240 000 inhabitants, two-thirds of whom are French-speaking and one-third German-speaking (Upper Valais). The economy is characterised by a difficult equilibrium between tourism, agriculture, industry and trade.

The structure of the school system in Valais has some noteworthy specific features.

The primary school saw the number of pupils fall from 2 500 in 1973 to 1 800 in 1988, this phenomenon being common to both the French and German-speaking regions. The average number of pupils per class thus fell from 26.2 to 17.7 in fifteen years. The primary school is at present struggling to meet the challenges of a secondary I that has become — in certain communes — a very innovative orientation cycle. The Valais primary schools are also those where a compulsory second language (French or German) was introduced long ago.

Secondary I education has undergone great changes in recent years. It lasts three years and is based on a school law of 1986. There are a number of ideas behind this law:

- differentiated teaching methods make possible an education adapted to the particularities of the "whole pupil";

- in all cases, the pupil has every chance of gradually progressing towards further studies or vocational training, if necessary benefitting from supportive measures;
- the parents have prime responsibility for their children's education, and have a considerable say in matters of repeating years or orientation;
- the teacher's role is strengthened.

After consultation with the authorities concerned, the communes have the possibility of choosing between two systems:

- a two-stream system;
- a single system in which pupils are grouped in classes integrated by level.

Secondary II starts in the final year of compulsory schooling and lasts five years for studies leading to *maturité*. The number of *maturité* certificates issued increased from 428 in 1984 to 532 in 1988. Secondary II also includes schools of commerce with mainly girls (1 400 pupils in 1988).

Vocational training includes schools in all branches of industry, health, agriculture, the arts, tourism. This vocational training is characterised above all by its prolongation into non-university colleges which have been actively supported in recent years. The establishments concerned are:

- the Valais cantonal engineering school;
- the Swiss school of tourism;
- the cantonal school of computer science;
- the pedagogic and social training centre;
- two higher schools for business and management (ESCEA).

Finally, it should be noted that this canton without a university of its own is developing its relations with all the universities in the country and with the federal polytechnics. There is a Valais-University commission which catalyses these relations.

The canton of Zürich

At first sight there is nothing to distinguish the metropolis of Zürich from any other metropolis in the Western world. We find here the same great dynamism, property speculation, a multitude of construction sites, and a swarming, hybrid population in which minorities rub shoulders, that we find everywhere else. This well-known cosmopolitan world is almost at the opposite extreme to the rural and mountainous Switzerland found, for example, about a hundred kilometres to the south. Zürich is the hub of the Swiss economy, the meeting place for all influences and an entry point where all that comes from abroad is filtered. The town is not only a business centre but also a cultural centre with a vigorous intellectual life. It is at Zürich that the famous *Neue Zürcher Zeitung* (NZZ) is published, a newspaper that is certainly authoritative in economic matters, but also a very influential public opinion-maker in educational matters, thanks to its "Educational Supplement" and its articles on educational policy, always of high quality, very informed, and which are not afraid to take the path of a certain orthodoxy and oppose suspect innovations that depart too much from it.

Thirty thousand students, the biggest concentration of students in Switzerland, attend two renowned higher education establishments, the Federal Polytechnic School and the University.

About one-sixth of the Swiss population live in the canton, whose per capita income is the fourth highest in the country.

The education system is very decentralised and the schools directorate in this canton does not have an easy life. It has to negotiate any proposal with many bodies, in which the teachers often have a considerable influence. It has therefore built up research and guidance apparatuses like the *Pädagogische Abteilung* and the *Pestalozzianum*. After almost twenty years of experimentation the canton has still not succeeded in reforming its secondary I cycle, whose structure, with its four different sections between which pupils can choose or to which they are oriented on completion of the six-year primary school, appears archaic. At secondary II level there are several full-time vocational schools as well as gymnasiums where students prepare for a cantonal *maturité* that is not recognised by the Confederation and gives entry only to the cantonal university and the other Swiss universities with which the canton has concluded special agreements.

Finally, the size of the special education sector (special classes and schools) should be mentioned. Approximately 5 per cent of the primary population are in special schooling. An interesting aspect is the great over-representation of migrant children with respect to their proportion in normal education. The percentage of migrant children in primary and secondary I is about 20 per cent, but their proportion in special primary is 37.5 per cent and in special secondary 46.2 per cent.

A courageous innovation should also be mentioned: the creation in Zürich of a public *Liceo artistico*, specially open to children of Italian origin, which offers the same curriculum as the Italian arts *lycée* and enables pupils to obtain both the Italian and the Swiss baccalaureates.

About 8 per cent of the children of school age (17 000 pupils) attend private schools.

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Chapter 2

THE ECONOMIC AND SOCIAL CONTEXT, AND THE LABOUR MARKET

Indicators of Switzerland's position among the industrialised countries

In view of Switzerland's close economic and cultural links with the countries of both the European Economic Community (EEC) and the European Free Trade Area (EFTA), these two groups of countries have been taken to situate Switzerland among the industrialised countries. It is not a matter of establishing a "hit parade", but rather of seeking a certain number of "tracks" along which the analysis of the functioning of the education system in the broader context of economic and social development might be pursued. The statistics for education and training are in fact less reliable and less complete than those concerning economic development and demographic trends, and data for the school sector need to be treated with great caution.

The economic context

In the OECD Economic Surveys, Switzerland is often given "good marks". The various economic and socio-demographic indicators confirm the enviable position of this country in both the European and world contexts, as shown by the comparison of basic statistics in Table A.1 in the Annex.

Gross domestic product (GDP) continued to grow at the vigorous rate of 3 per cent in 1988. This is partly explained by the high rate of gross fixed capital formation as a percentage of GDP: 25.2 per cent in 1987. This rate is the third highest in the OECD area after Japan (28.9) and Norway (28), and hence the second in the combined EEC/EFTA group.

As a result, the unemployment rate (as a percentage of the labour force), at 0.7 per cent, remains one of the lowest in the OECD, being surpassed only by Iceland (0.5 per cent). Let us recall that in 1987 the unemployment rate for the EEC as a whole was 10.8 per cent, for the European OECD countries 10.5 per cent, and for the OECD as a whole 7.8 per cent. For the period 1979-1986 Switzerland took the "blue riband" from Iceland (0.6 as against 0.7 per cent). For 1989 the rate is likely to be 0.6 per cent, though there are of course regional variations. Unemployment among young people of 18 to 24 is virtually non-existent.

When these economic performances are translated into per capita GDP expressed in dollars, Switzerland has the highest figure in the OECD area (US$ 25 848), way ahead of Norway (US$ 19 576) and Japan (US$ 19 465). Per capita consumption, also expressed in dollars (US$ 9 349), places Switzerland second in Europe, behind Norway (US$ 9 930), these two countries being beaten only by the United States (US$ 12 232) and Canada (US$ 10 059) in the OECD area.

The breakdown of net civilian employment by broad economic sector shows that Switzerland remains one of the most industrialised countries in the OECD, with 37.7 per cent of the labour force in industry, equal with Austria and exceeded only by Germany with 40.5 per cent. Table A.1 also shows that the proportion of the labour force employed in the service sector (55.8 per cent) remains lower than in a number of other European countries. Taking the criterion of value-added by origin in 1985 (the percentage of GDP at factor cost), we obtain a slightly different picture of the production of wealth in Switzerland, for agriculture accounts for 3.6 per cent, industry 27.9 per cent, construction 7.6 per cent and services 60.9 per cent. As in the other advanced industrialised countries, the services share has increased over the years, as shown in Figure A.1 in the Annex.

Many Swiss products are exported, while many of the inputs required for production are imported. Exports of goods amount to 26.6 per cent of GDP and imports 29.6 per cent, which puts the country in fifth place in the OECD and European countries. In 1988, the regional breakdown of foreign trade showed that 78.6 per cent of exports went to OECD countries, and 56 per cent to EEC countries, while 90.3 per cent of imports came from OECD countries and 71.7 per cent from EEC countries.

Switzerland's industrial success has only been possible thanks to a number of factors: the high level of investment, massive importation of foreign labour (68 per cent of the million foreigners working in Switzerland are nationals of EEC countries), the quality of vocational training, which will be analysed in more detail below, and the exceptional research and development effort. Switzerland has in fact for some time been one of the industrial countries that spends the most in relative terms (per capita or as a percentage of GDP) on research and development (R&D). It is considered that gross domestic R&D expenditure as a percentage of gross domestic product — 2.89 per cent, which puts Switzerland in second place behind Sweden (2.93 per cent) among the OECD countries — is somewhat under-estimated in the absence of any specific figures for this field.

The demographic context

Due to its dynamic economic development, Switzerland has lately been experiencing tensions on the labour market. The growth of employment in services and the building industry has been particularly marked. According to the recent *Economic Survey of Switzerland*, the proportion of enterprises experiencing labour shortages has risen to 47 per cent: "Most of the unfilled vacancies were in the higher-skill categories, but there also appeared to be a lack of unskilled labour, particularly in services. Banks and insurance companies seemed to be experiencing the greatest labour constraints, closely followed by several industrial branches, electrical engineering and electronics" (p. 17). The significant increase in the labour force was due to a large extent to the increase in the number of immigrant workers, who now make up about one-fifth of the labour force.

If we examine the age structure of the population and its projection to 2040 for certain EEC and EFTA countries (Table A.2), it can be seen that the fall in the already low birth rate has in recent decades reduced demographic expansion and is going to change fundamentally the age pyramid in the relatively near future. Discussing the economic consequences of the ageing of the population, the 1989 *Economic Survey of Switzerland* rightly points out that this ageing is not peculiar to Switzerland. Nevertheless, the age group corresponding to the new entrants to active life and having up-to-date knowledge is going to decline considerably in the future. All the available apprenticeships can no longer be filled because of the decline in the number of 15 to 19 year-olds. On Swiss projections, in a single decade, between 1980 and 1990, the numbers in this age bracket will fall by about 100 000, and by about another 60 000 by 2025, i.e. all told, a third down on the number in 1980. From Table A.2 it can be seen that the proportion of young people is smaller than the corresponding OECD average, and the proportion of elderly people larger. "By the year 2040, the proportion of over-65s would be 28.3 per cent (13.8 per cent in 1980), which is the highest figure among the industrialised countries and slightly higher than the figure for Germany" (p. 69).

Up to now migratory flows have more or less played the role of compensating for the demographic trend. "The main scenario in the authorities' projections is explicitly based on the government's target of stabilizing the share of the foreign population as of 1990. In any event, the 1989 *Economic Survey* argues that, considering the shortage of qualified manpower in some industries, "the pressure of demography on the long-term labour market could favour selective immigration and recourse to foreign labour (frontier and seasonal workers)" (p. 84).

Indeed, this is already the case. In France, employers in frontier regions are already complaining about the departure of skilled local labour to Switzerland. In large and medium Swiss enterprises, about 25 to 30 per cent of the jobs requiring university level are held by foreigners. This proportion may reach 50 per cent in high-level research laboratories. Among the factors that cause major Swiss firms to establish themselves abroad is the insufficient number of highly qualified Swiss nationals in certain industries.

If the policy of holding the number of foreign residents at its existing level is continued, the OECD considers that only the female population would be able to reduce significantly the pressure that the ageing of the population is putting on the labour market. But as shown in Figure A.2, the female participation rate is still low in Switzerland as compared with other rich OECD countries. The overall female participation rate, 52 per cent of the potential female labour force, is still below its 1974 level. In the last twenty years, the female participation rate has remained static, whereas it has risen in most other industrialised countries. Over the years it has fallen below the average rate for the industrialised countries. According to other statistics, the female participation rate in 1973 was 54.1 per cent in Switzerland as against 49.1 per cent for all OECD countries. In 1987 the corresponding figures were 54.6 and 54.7 per cent.

As will be discussed below, the female participation rate depends on a number of factors that the authorities can influence. One of these parameters is the level of skills obtained by girls in the education and training system. If, after a solid initial education, opportunities for retraining could be offered after one or more exits from the active population (to raise children for example), the female participation rate might increase.

The school context

The impact of the demographic phenomena mentioned above is seen in the proportion of the school population in the total population. Table A.2 shows that Switzerland is in the unenviable position of being the "leader" of the EFTA countries with a low school-age population. The proportion of 15 to 64 year-olds is, logically enough, the highest, while the proportion of over-65s is exceeded only by that of Sweden. The difference with regard to EEC countries is perhaps not so marked, a few countries (Germany, Denmark, Luxemburg) being affected by ageing of the population as much as, or even more than, Switzerland.

Table 1, showing the proportion of the population between 3 and 24, confirms the earlier data. Among the EEC and EFTA countries, only Sweden has a lower proportion of 3 to 24 year-olds in the total population than Switzerland. The specific nature of Swiss education at pre-primary and secondary II level means that Switzerland has the lowest proportion of 3 to 24 year-

Table 1. **Population aged 3 to 24 and population in education as percentages of the total population, 1986/87**

Percentage

	Total population	Population in education		
		Full-time	Part-time	Total
EEC countries				
Belgium	30.4	22.6	0.9	23.5
Denmark	30.2	20.6		20.6
France	32.3	24.6	1.0	25.6
Germany	27.3	17.4	3.2	20.6
Greece[a]	32.2	20.6	. .	20.6
Ireland[a]	41.1	27.4	. .	27.4
Netherlands	32.3	22.3	0.6	22.9
Portugal[a]	34.1	19.0	. .	19.0
Spain	35.6	26.3	. .	26.3
United Kingdom	31.4	20.9	3.4	24.3
EFTA countries				
Austria	31.4	18.0	2.3	20.3
Finland	30.0	18.5	. .	18.5
Norway	31.6	21.5	1.4	22.9
Sweden[b]	28.5	16.8	. .	16.8
Switzerland[a]	29.1	16.1	3.6	19.7

a) 1985/86.
b) Excluding pre-primary.
Source: Education in OECD Countries 1986-87. A Compendium of Statistical Information, OECD, Paris, 1989.

olds in full-time education for both groups of countries, but the highest proportion in part-time education.

Switzerland's particular situation, determined by its demographic trend and the organisation of its school system, can be seen in Table 2 showing the breakdown of the school population by level. This breakdown indirectly determines the cost of the system and its options as regards curricula, teaching methods and human resources. At pre-primary and compulsory schooling levels, Switzerland is in a middling position, together with several other EEC and EFTA countries. What differentiates Switzerland from these countries is its situation with regard to the organisation and enrolment rates at post-compulsory level. Switzerland has the lowest school population in full-time second cycle. The proportion of students at tertiary level is the lowest among the EFTA countries (8.6 per cent), while among the EEC countries, only Portugal (5 per cent), the United Kingdom (6.6 per cent) and Ireland (7.1 per cent) have lower levels.

If we now examine school enrolment rates, it can be seen from Table 3 on pre-primary education (by single age), and bearing in mind that there are differences between countries as regards the ages at which children can enter pre-primary or begin compulsory schooling, that Switzerland, if we leave aside two Scandinavian countries (Finland and Norway), has not yet reached the high rates of certain industrialised countries.

On the other hand, Switzerland ranks very high (second) in the school enrolment rate for 15 to 19 year-olds, both for the total number in the second cycle and the total population in this age group (Table 4). As is generally the case in countries where the greater part of technical and

Table 2. **Breakdown of total enrolment by level of education, in 1986/87**

Percentage

	Pre-primary	1st level and 2nd level-1st stage	2nd level-2nd stage	Special	2nd level part-time	3rd level
EEC countries						
Belgium	16.4	31.3[b]	35.0[b]	2.6	3.9	10.9
Denmark	5.3	62.0	21.5[c]	. .	. .	11.2
France	9.3	54.0	24.1	. .	. .	12.6
Germany	13.4	47.2	9.4	2.1	15.4	12.5
Greece[a]	7.8	64.8	18.2	0.3	. .	8.9
Ireland[a]	15.0	64.2	12.8	0.9	. .	7.1
Luxembourg	29.6	48.2	17.6	. .	4.6	. .
Netherlands	. .	69.4[d]	15.6	3.1	. .	11.9
Portugal[a]	5.4	79.2	10.4	. .	. .	5.0
Spain	10.6	56.6	22.7	0.4	. .	9.7
United Kingdom	5.5	52.4	20.6	1.0	11.8	6.6
EFTA countries						
Austria	12.4	46.7	17.9	0.0	11.2	14.7
Finland	9.3	54.0	24.1	. .	. .	12.6
Norway	10.9	54.2	19.6	1.0	3.3	10.9
Sweden	. .	66.2	20.0	0.9	. .	13.0
Switzerland	9.6	54.1	7.9	2.5	17.1	8.6[a]

a) 1985/86.
b) Second level-first stage is included in second level-second stage, and not in first level.
c) Including part-time education.
d) Basic education (pre-primary and first level).
Source: *Education in OECD Countries 1986-87. A Compendium of Statistical Information*, OECD, Paris, 1989.

second cycle vocational training is organised part-time or in the form of apprenticeship and where this type of training is one of the "royal roads" to a job, girls are much less represented here than in full-time general or technical/vocational education. It is in Switzerland that we find the greatest proportion of girls in full-time technical/vocational education, while they are less present in general and comprehensive education in Switzerland than in other EFTA and EEC countries.

The enrolment rate for the 20-24 year-olds (Table 5) places Switzerland in a middling position among the two groups of countries as regards the overall total, but it is clearly in the second half of the table as regards full-time education at the tertiary level. Nevertheless, the figures for new enrolments per thousand population of the corresponding age (Table 6) shows that Switzerland is continuing to catch up with the other industrialised countries, much more through level 5 (or short cycle) than level 6, where Switzerland remains in last place among the European countries considered. It should be recalled that level 5 covers courses given generally, but not exclusively, outside the universities and leading to a final diploma lower than the first complete university cycle (corresponding to level 6, level 7 being post-graduate education).

Switzerland is again in last position if we take the number of tertiary diplomas per thousand population of corresponding age (Table 6) at levels 6 and 7, second last place in level 5, ahead of Italy, this being explained by the near-absence of any non-university higher education in Italy. In this connection it should be remembered that the Swiss higher technical schools (ETS) (level

Table 3. **Enrolment rates in pre-primary education, in 1986/87**

Percentage

	Age 2		Age 3		Age 4		Age 5		Age 6	
	Total	Girls	Total	Girls	Total	Girls	Total	Girls	Total	Girls
EEC countries										
Belgium	21.1	21.6	94.0	94.3	98.2	98.6	98.9	98.0	2.5	2.0
Denmark	..	..	..	..	..	..	..	..	95.3	95.2
France	33.6	33.9	95.4	95.4	100.0	100.0	100.0	99.7	1.5	1.2
Germany	12.6	13.9	38.7	41.0	72.3	72.8	85.5	86.8	69.9	68.4
Greece	..	..	8.9	9.0	43.7	44.5	60.1	60.2	1.1	1.1
Ireland[a]	..	..	0.3	0.3	54.3	55.9	98.9	98.9	50.0	47.6
Netherlands	..	..	4.0	4.2	97.3	97.5	98.5	98.9	..	..
Spain	4.6	4.4	16.8	17.4	88.3	90.6	100.0	100.0	..	..
United Kingdom	1.3	1.3	25.0	25.2	68.1	68.1	..	..	..	..
EFTA countries										
Austria	1.2	1.2	28.4	29.2	61.4	61.8	90.4	88.9	23.9	23.1
Finland[a]	21.1	..	16.0	..	20.8	..	26.6	..	50.0	..
Norway	20.8	..	29.8	..	41.1	..	49.9	..	60.3	..
Switzerland	..	..	3.8	3.9	16.2	16.2	66.4	66.5	77.8	77.4

a) 1985/86.

Source: *Education in OECD Countries 1986-87. A Compendium of Statistical Information*, OECD, Paris, 1989, Table 4.1.

Table 4. **Enrolment rates for the 15-19 year age group, in 1986/87**

Percentage

	Second level				Third level		Grand total
	General	Vocational/ technical	Part-time	Total	Full-time	Part-time	
EEC countries							
Belgium	63.0		4.2	67.2	11.2	0.2	78.6
Denmark	48.4	26.6		75.0	1.0	. .	76.0
France	32.2	28.2	5.1	66.5	7.8	. .	73.4
Germany	17.3	13.1	43.5	73.8	2.4	0.0	76.2
Greece	34.8	13.1	. .	47.9	9.6	. .	61.1
Ireland	46.1	6.5	. .	52.6	8.5	. .	61.1
Netherlands	33.0	34.8	. .	67.8	5.0	0.0	72.8
Spain	0.8	16.3	. .	47.1	. .	. .	. .
United Kingdom	29.6	7.5	11.2	48.3	4.8	1.3	54.3
EFTA countries							
Finland	50.4[a]	20.4[a]	. .	70.8[a]	1.2	. .	72.0
Norway	43.4	23.8	1.3	68.8	5.0	0.0	72.8
Sweden	30.4	31.3	. .	61.7	2.7	. .	64.5
Switzerland	33.1	5.2	38.2	76.5	1.1[a]	0.0[a]	77.6

a) 1985/86.

Source: *Education in OECD Countries 1986-87. A Compendium of Statistical Information*, OECD, Paris, 1989, Chart V*b*.

5) train about 60 per cent of the higher level technical labour force as against only 33 per cent graduates from higher education (levels 6 and 7). In some subject areas, candidates qualified for entry to ETS are not accepted because of the shortage of places.

Switzerland's position may also be explained by the low representation of girls in higher education. In terms of enrolments and diplomas (Tables 7 and 8), Switzerland is in last place among the countries concerned as regards the percentage of girls in levels 5, 6 and 7, except in the case of level-5 diplomas. A similar situation is found if we consider the percentage of girls among new entrants to both levels 5 and 6 and for the total (Table 9).

The difficulty of gathering certain statistics in Switzerland makes it impossible to present comparative data for the different categories of school staff. On the other hand, it is not without interest to situate Switzerland with respect to other countries as regards the level of expenditure on education (Table 10). As a percentage of GDP, education expenditure in Switzerland is the lowest in the EFTA, but as compared with the EEC countries, Switzerland is ahead of the United Kingdom, Germany, Portugal and Greece.

This level of 5.2 per cent of GDP in 1986 (public plus private sources) should remain more or less stable in view of the expected demographic trend (it was 5.8 per cent in 1976), unless there are new measures aimed at increasing the population in education at the higher levels and systematically to develop continuing education. But the latter could be based on the existence of initial training infrastructures with excess capacity.

As regards the percentage of total public expenditure, Switzerland is top of all the countries considered, but this percentage is meaningful only in relation to total public expenditure as a percentage of GDP. In this field, Switzerland has the lowest level of all the countries considered.

Table 5. **Enrolment rates for the 20-24 year age group, in 1986/87**

Percentage

	Second level				Third level		Grand total
	General	Vocational/ technical	Part-time	Total	Full-time	Part-time	
EEC countries							
Belgium	—— 2.2 ——		7.2	9.4	14.1	1.4	24.9
Denmark	0.9	—— 11.5 ——		12.4	13.9	. .	26.4
France	0.2	0.7	0.1	1.1	14.6	. .	15.7
Germany	0.6	1.5	7.9	10.0	14.1	0.2	24.3
Greece	0.5	1.8	. .	2.3	13.2	. .	15.5
Ireland	0.1	0.4	. .	0.5	4.6	. .	5.1
Netherlands	0.3	4.6	. .	4.9	13.8	0.7	19.4
United Kingdom	. .	0.7	4.4	5.1	6.3	2.9	14.3
EFTA countries							
Finland	0.7[a]	8.7[a]	. .	9.4[a]	11.2	. .	20.6
Norway	0.6	5.2	2.0	7.8	13.5	1.8	23.1
Sweden	0.0	0.1	. .	0.1	11.3	. .	11.4
Switzerland	1.0	1.7	5.6	8.3	10.0[a]	0.7[a]	19.0

a) 1985/86.

Source: Education in OECD Countries 1986-87. A Compendium of Statistical Information, OECD, Paris, 1989, Chart Vc.

Table 6. **Numbers obtaining third level qualification per thousand persons in the corresponding age group, in 1986**

	Level 5		Level 6		Level 7	
	Age group	Number	Age group	Number	Age group	Number
EEC countries						
Belgium	20-21	36	22-23	149	Included in level 6	
Denmark	21-22	103	23-24	127	Included in level 6	
France	20-21	147	22-23	153	24-25	62
Germany[a]	21-22	77	23-24	124	25-26	15
Greece	19-20	49	21-22	109	23-24	4
Ireland[b]	19-20	10	21-22	108	23-24	52
Italy	21-22	4	23-24	79	24-25	14
Netherlands	20-21	165	22-23	69	Included in level 6	
United Kingdom	20-21	123	22-23	142	24-25	46
EFTA countries						
Austria	20-21	36	22-23	68	24-25	5
Finland	21-22	170	23-24	118	25-26	9
Norway[c]	21-22	363	23-24	161	25-26	73
Switzerland[d]	21-22	9	23-24	61	25-26	3

a) 1985.

b) 1985. Universities and equivalent institutions only. The data are not comparable with those of the previous years which covered only part of these institutions.

c) The relatively high number of qualifications obtained derives from the frequency with which Norwegian students obtain several qualifications during the same year.

d) 1985. Universities only.

Source: Education in OECD Countries 1986-87. A Compendium of Statistical Information, OECD, Paris, 1989, Table 5.5.

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Table 7. **Percentage of women among the new entrants in third level education, in 1986/87 (total part-time and full-time)**

	Level 5	Level 6	Total
EEC countries			
Belgium	..	..	53.4
Denmark	65.4	48.5	53.9
France	48.7	58.3	54.5
Germany	58.0	40.3	46.7
Greece	47.9	53.0	50.7
Ireland[a]	..	..	47.5
Italy	55.9	47.5	47.8
Netherlands	..	41.5[b]	..
Spain	72.8	50.8	50.8
United Kingdom	47.9	44.1	45.9
EFTA countries			
Austria	65.0	48.9	52.0
Finland[c]	55.0	53.0	54.0
Sweden	55.7	52.2	54.9
Switzerland[d]	25.2	39.0	30.1

a) 1985/86. Full-time only.
b) Universities and distance-learning universities only.
c) Full-time only.
d) 1985/86.
Source: Education in OECD Countries 1986-87. A Compendium of Statistical Information, OECD, Paris, 1989, Table 3.1.

as confirmed by another criterion: total government current expenditure on goods and services as a percentage of GDP (Table A.1 in the Annex). Education thus appears to be an essential public sector task, but less important than elsewhere, which gives some grounds to hope that the authorities will see here a certain room for manoeuvre to develop the system in specific directions.

The pressure on the education system from the labour market

The problems

After a quarter of a century of economic analyses of education, there is no longer any need to demonstrate that the formation of human capital, a highly skilled labour force, constitutes the essential factor for growth and competitiveness in the advanced industrial countries. The United States report *A nation at risk* (National Commission on Excellence, 1983) puts this in the most dramatic fashion:

> "... knowledge, learning, information and skilled intelligence are the new raw materials of international commerce".

For Switzerland it is obvious that an inadequate supply of skilled people would be a serious threat to economic progress and competitiveness. As has again been confirmed by the recent *OECD Economic Survey*, Switzerland has been able further to improve its international economic position in the first place through price competitiveness thanks to the favourable organisation of productivity, and then through the trend in unit costs. In this connection, however, it

Table 8. **Percentage of women among the students (1986/87: total full-time and part-time) and the qualifications awarded (1986), in third level education**

	Level 5		Level 6		Level 7	
	Students	Qualifications	Students	Qualifications	Students	Qualifications
EEC countries						
Belgium	56.5	54.4	39.0	38.9	Included in level 6	
Denmark	70.2	65.1	43.9	45.1	Included in level 6	
France	47.3	53.0	53.6	48.9	39.0	40.4
Germany[a]	64.1	63.7	37.9	38.2	Included in level 6	24.1
Greece	50.4	56.2	48.7	51.1	Included in level 6	32.5
Ireland[c]	42.6	54.9	47.0	44.3	49.5	51.2
Italy	55.6	59.9	47.1	45.8	32.8	35.9
Netherlands	46.0	49.4	37.8	33.0	Included in level 6	
Spain	77.0	87.1	50.0	54.5	36.4	34.2
United Kingdom	51.1	54.1	45.4	44.4	34.9	37.0
EFTA countries						
Austria	69.0	73.1	43.3	39.3	28.9	24.2
Finland	47.0[b]	52.4	51.8[b]	52.3	41.1[b]	27.9
Norway[d]	51.3	57.4	60.7	60.3	41.8	32.2
Sweden	57.9	. .	46.5	. .	30.1	. .
Switzerland[e]	26.0	53.5	36.5	32.6	27.8	22.4

a) 1985 for the qualifications; 1985/86 for the students.
b) Full-time only.
c) 1985. Universities and equivalent institutions only. The data are not comparable with those of the previous years which covered only a part of these institutions for the qualifications; 1985/86, full-time only for the students.
d) The relatively high number of qualifications obtained derives from the frequency with which Norwegian students gain several qualifications during the same year.
e) Qualifications awarded by universities only.

Source: Education in OECD Countries 1986-87. A Compendium of Statistical Information, OECD, Paris, 1989, Tables 3.4 and 5.4.

Table 9. **New entrants in third level education per thousand persons in the corresponding age group, in 1986/87**

	Level 5			Level 6			Total		
	Male	Female	Total	Male	Female	Total	Male	Female	Total
EEC countries									
Belgium	..	..	..	..	..	..	392	467	429
Denmark	79	158	117	248	248	248	327	406	365
France	130	128	129	163	238	200	293	367	329
Germany	81	118	99	202	144	174	284	262	273
Greece	148	150	149	161	200	180	309	350	328
Ireland[a]	..	..	..	..	..	..	285	266	276
Italy	8	10	9	252	235	244	260	246	253
Spain	0	0	0	292	316	304	292	316	304
United Kingdom	159	153	156	191	158	175	350	311	331
EFTA countries									
Austria	28	54	41	185	184	184	205	232	218
Finland[b]	208	264	235	163	191	177	375	458	416
Sweden	456	603	528	144	166	155	594	761	675
Switzerland[c]	330	114	226	144	96	120	483	217	353

a) 1985/86. Full-time only.
b) Full-time only.
c) 1985/86.
Source: Education in OECD Countries 1986-87. A Compendium of Statistical Information, OECD, Paris, 1989, Table 3.2.

Table 10. **Public expenditure on education[a], including subsidies, as percentage of GDP and of total public expenditure, in 1986**

	As percentage of GDP			Total as % of total public expenditure	Total public expenditure as % of GDP
	Public sources	Private sources	Total		
EEC countries					
Belgium[b]	5.42	..	..	10.1	53.5
Denmark	7.17	0.10	7.27	12.8	56.0
France	5.59	1.03	6.62	10.9	51.8
Germany[c]	4.31	0.16	4.47	9.5	46.9
Greece[d]	2.88	0.20	3.08	6.6	43.7
Ireland	5.89	0.28	6.17	10.8	54.6
Netherlands[d]	6.55	0.21	6.77	11.3	59.7
Portugal	4.10	..	..	..	..
United Kingdom	5.04	..	..	11.0	45.7
EFTA countries					
Austria	6.03	..	..	11.5	52.4
Finland[c]	5.23	0.49	5.72	13.6	41.9
Norway	6.56	0.16	6.72	13.5	49.9
Sweden	7.49	..	..	11.8	63.6
Switzerland	5.10	0.10	5.20	19.0[e]	26.9[e]

a) Including transactions relating to loans for Austria, Denmark, Germany, Greece, Ireland, Norway, the Netherlands, Sweden and Switzerland.
b) Expenditure of the Ministries of Education only.
c) Public and private expenditure.
d) 1985.
e) Data from "Finances publiques en Suisse" (BFS/E.F.) 1986, Tables 1, 2 and 6.
Source: Education in OECD Countries 1986-87. A Compendium of Statistical Information, OECD, Paris, 1989, Table 6.2.

will be necessary to ensure that the possibilities for further productivity increases are not hampered by a shortage of skilled labour. Second, as would be expected, the importance to Switzerland of non-price competitiveness (quality, technology) is stressed. Here, the relationship with an appropriate level of training is even more direct.

Despite a basically very positive evaluation of the Swiss situation, there are critical comments that cannot be neglected. There is a latent risk of a relative deterioration of Switzerland's position as regards its industrial competence and capacity for innovation[1]. This is why a report by experts from the economics department of the Confederation gives first priority to a "future-oriented training policy" (BFK, Berne, 1986), while also stressing the importance of a research policy closely linked to training policy. Lastly: "... it can be seen that enterprise and public schemes are training too few candidates for occupations in which there are likely to be many jobs available. Thus Switzerland is going to lose, in the medium to longer term, its relative advantages in advanced technology goods"[2].

In principle, it would be very useful to have a precise quantification of the relationship between skill requirements and competitiveness, but as will be pointed out hereafter, this relationship is much too complex for us to be able to express it in terms of a given number of people of such and such a skill level. However, the need for a continuing increase in the skills potential of the Swiss labour force is obvious: the efficiency of the greater part of Swiss industry is based on its being equipped with the latest machinery. The Confederation's recent package of exceptional measures listed at the end of this chapter shows the extent to which the urgency of the needed intervention in this area has been realised, but on the other hand these measures constitute only the tip of the iceberg. Reduction of the mean value of the life cycle of products, increased innovation content of products, modernisation of all tertiary sector services, internationalisation: these are only a few other aspects of the structural changes under way. In trying to tackle these problems, an increasing number of enterprises are finding the lack of skilled labour to be one of the most serious bottlenecks.

The debate regarding the shortage of skilled manpower is characterised in Switzerland — as in a number of other industrialised countries — by a certain degree of ambiguity. Despite the obvious concern that this question raises, there have been very few analytical studies on the subject. The examiners got the impression that there were very few medium- and/or long-term regular surveys on:

- the overall scale in quantitative terms of the lack of skilled manpower,
- the scale of this shortage in the various skill categories or levels of training,
- cost indicators for skilled manpower requirements (earnings differentials by occupational groups),
- the regional pattern of skilled manpower requirements,
- the relationship between shortage of skilled manpower and the limitations on the expansion of various industries (the skills bottleneck),
- the limitation on economic growth or, more specifically, on competitiveness as the result of the lack of skilled manpower.

However, the examiners were informed that OFIAMT had commissioned the *Centre de Recherches Conjoncturelles* (Centre for Economic Research) of the Zurich Federal Polytechnic to carry out a study of this question. The Centre has published a report on the "Quantitative and qualitative disparities on the Swiss labour market in the 1990s" (S.Gaillard, ZH 1989). This report, which examines the relationship between demographic, economic and structural factors, among other things, describes the system of education and training as a bottleneck and by and large reaches the same conclusions as the federal government in its message to Parliament (of 28th June 1989) regarding special measures to support continuing education and training at the university and vocational levels, and the promotion of new computer integrated manufacturing (CIM) techniques (see the last section of this chapter).

Since 1983 the federal authorities have been monitoring the sharp rise in the demand for manpower from business and industry, and particularly for skilled manpower. Statistics are published every quarter showing the shortages or surpluses of skilled, semi-skilled or unskilled labour as reported by individual firms (see Figure A.3 in the Annex). In addition to this analysis, which is by type of industry, there are other statistics giving a geographic breakdown of manpower requirements. However, it was pointed out to us, quite rightly, that the interactions between the various factors involved were so hedged around with unknowns that quantitative forecasts for skilled manpower requirements by industry, regions and occupational levels within industries or individual firms were, from a methodological standpoint, highly complex and difficult to manipulate.

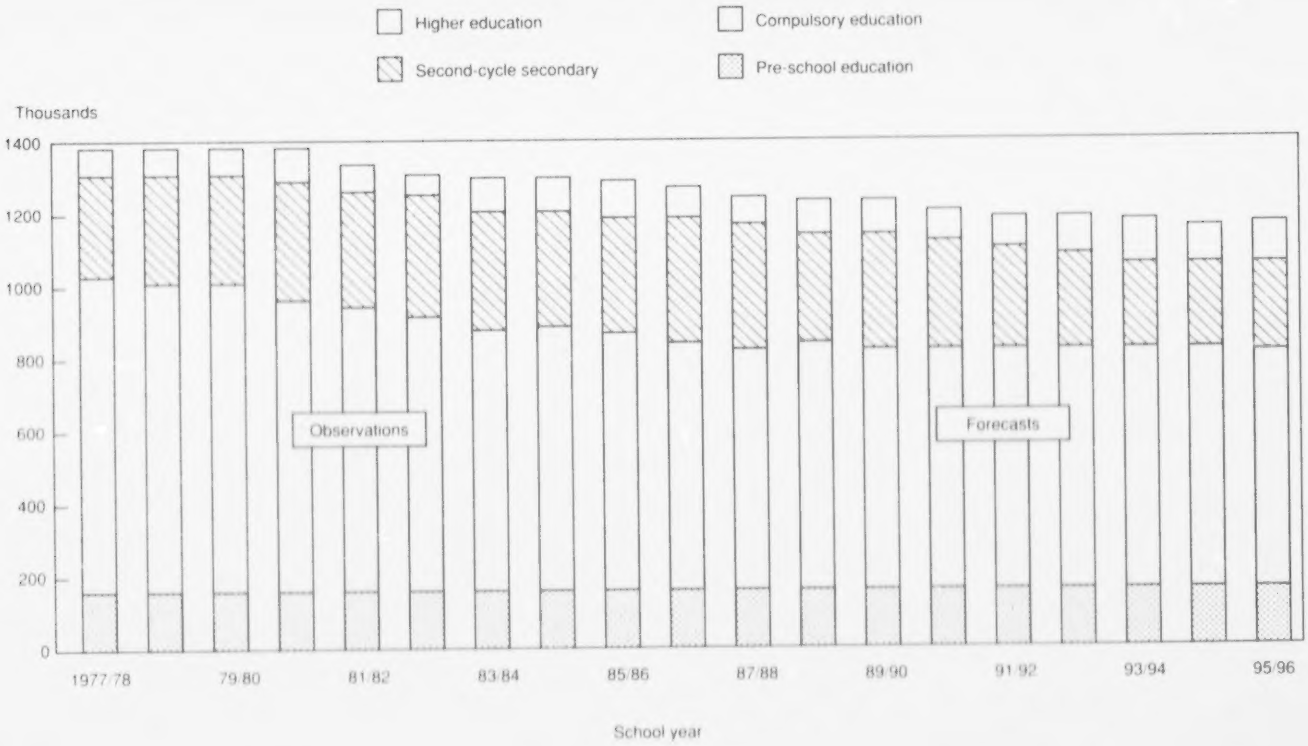
Thus it is conceivable that what we saw as a lack of analysis and forecasting could lead to the wrong assumption that it would be possible to assess skills requirements by comparing supply and demand, and that accordingly a form of long-term planning audit for the labour force should be put in hand. In the past there have been enough flagrant statistical errors in the context of evaluations using the "manpower demand" and the "social demand" type of approach to fill countless volumes! Nonetheless, even projections of the status quo are not without their usefulness in providing estimated orders of magnitude, shortfalls — or surpluses — for differing assumptions. The supply of skills, in particular, since it is conditioned by demographic factors, can be assessed with a certain reliability. When this assessment reveals major gaps in the manpower supply and demand balance (which labour mobility, on however vast a scale, would be unable to offset), serious consideration has to be given to long-term training and skills strategies. It is a well-known fact that, in this area, lead times are particularly long and the period needed for measures to bear fruit particularly protracted.

The measures taken in Switzerland in the area of education and training are for the most part reactions. Where these concern the labour market, the signals that trigger them off come from the corporate sector or other employers. Since the timespan for human resource planning in business and industry is, by the nature of things, very limited — about three years at most — the surveys of firms (like those that helped to trigger off the "Continuing training offensive", which we shall be discussing later) are usually too late to be of much value. New directions for educational policy (which have in addition to take into account the need for co-ordination between the cantons) have to be planned in terms of decades because, in Switzerland as elsewhere, the lead time between diagnosis and remedial measures and their effects is extraordinary long. As one Swiss interviewee put it, "in the case of education and training, the painful period is still to come".

The other possibility, which would be even better suited to Switzerland's economic system, i.e. that of responding to indicators of shortages on the labour market — in other words, income differentials by occupational categories and levels of training — is apparently even less used by those responsible for training and labour market policies. Nevertheless, the examiners were unable to obtain any systematic data on income differentials specifically related to skills.

In the light of these comments of a general and conceptual character, it is not surprising that the investigation within the cantons had to be confined to a few broad facts, most of them already well known, on the long-term skills trends. The question is whether these broad facts are enough to give an accurate picture of the reality. Moreover, they are almost exclusively concerned with the "supply" aspect.

Figure 1. **Students by level of education, from 1977/78 to 1995/96**



Source : Office fédéral de la statistique, Berne.

The potential supply

The key determining factor in this case is, without doubt, the demographic trend referred to earlier. The salient features of this trend are summarised in Table A.3 and Figure A.3, and based on a projection made by the Federal Statistical Office (OFS) up to the year 2025. What this shows is that, despite an overall population increase of roughly 700 000 between 1970 and 2000, there will be a sharp drop in the resident school-age population at both the compulsory and non-compulsory levels. The numbers in the 0-19 age group will fall by 388 000 over the 30-year period, from 31 per cent of the total population in 1970 to 22.4 per cent in 2000.

These demographic changes will obviously have an effect on enrolment in the different levels of education. Figure 1 illustrates these trends using the OFS projections given in Table 11.

Table 11. **Numbers of pupils/students by level of education, from 1977/78 to 1995/96**

Thousands

School year	Pre-school	Compulsory education	2nd cycle secondary	Higher education	Total
1977/78	128	905	264	75	1 372
1978/79	125	893	273	78	1 369
1979/80	122	873	287	82	1 364
1980/81	120	850	299	85	1 354
1981/82	119	825	308	88	1 340
1982/83	120	798	315	91	1 324
1983/84	119	771	321	96	1 307
1984/85	121	745	323	106	1 295
1985/86	123	724	320	110	1 277
1986/87	127	708	316	117	1 268
1987/88	133	698	313	122	1 267
1988/89	131	692	299	120	1 242
1989/90	131	689	289	117	1 226
1990/91	132	686	279	114	1 211
1991/92	133	685	266	111	1 195
1992/93	135	686	256	107	1 184
1993/94	137	688	245	103	1 176
1994/95	138	688	245	99	1 170
1995/96	139	690	243	95	1 167

Source: Office fédéral de la statistique, Berne.

Here again the trends are undeniable, even for those who are the most skeptical about forecasts:

Table 12. **Enrolment in the various levels of education, 1985/86 - 1995/96**

Thousands

School year	Pre-school	Compulsory education	2nd cycle secondary	Higher education	Total
85/86	123	724	320	110	1 277
In %	9.6	56.7	25.1	8.6	100.0
95/96	139	690	243	95	1 167
In %	11.9	59.1	21.5	8.1	100.0

Source: Office fédéral de la statistique, Berne.

In other words, comparing 1995/96 with 1985/86, there will be 34 000 (i.e. 4.7 per cent) fewer students in compulsory education, 77 000 (i.e. 24.1 per cent) fewer in second-cycle secondary and 15 000 (i.e. 13.6 per cent) fewer in higher education.

These trends should also be reflected in those for the numbers qualifying at the end of their educational career. However, it should be said that there is no direct relationship between the numbers completing their education and the supply of manpower: these numbers have first of all to be multiplied by the specific rates of entry into the labour force by age, level of education and sex. These rates are nowhere near 100 per cent and, in the case of the younger age groups in particular, the end of their education by no means coincides with the start of their working life.

The labour force participation rates for adults by level of attainment, sex and age may also reveal potential reserves of manpower, as can be seen from Table A.4 in the Annex. Although it is not easy to make cross-country comparisons of such data, it would seem from a recent OECD survey on this subject that Switzerland has not only a reserve of female labour, bearing out earlier statistics in this connection[3], but perhaps also a potential reserve of male labour within the 55 and over age group.

Given that the Swiss authorities have data on the educational attainment of those aged from over 15, 20, 25, etc. up to over 70, by sex, and by whether or not they are economically active, it would be possible as a start to define fairly accurately the target groups for a policy to mobilise human resources. The historic data for labour force participation rates (Table A.5) by sex and nationality could also prove very useful in formulating an outline programme in this area.

On the demand side of the labour "balance sheet", Switzerland has no corresponding projections of GDP and productivity trends to indicate future manpower requirements in each sector; and even in reference to the past, the only information available is on unsatisfied demand for skilled workers.

Almost all sectors of the Swiss economy suffer from a chronic shortage of labour. More than half (53 per cent) of firms surveyed during the second quarter of 1989 complained that skilled workers were hard to come by (see Figure A.4). Since 1982 the situation has steadily worsened. In some sectors the proportion of businesses seriously affected by the shortage of skilled labour exceeds 70 per cent. Worst hit are banks (76.6 per cent) and machinery firms (74.7 per cent)[4].

In the absence of any projections about the most highly qualified members of the working population and when they are likely to leave the labour force, it is not even possible to compute the supply-demand balances for certain categories of skilled personnel. It would, for instance, be interesting to know, in respect of new supply and demand, what skills are likely to be scarcest in the future (with at least a breakdown of mere replacement and new, additional requirements). Naturally any such assessment would have to take into account changes in the labour market relating to trends in the female participation rate and migrant behaviour.

In short, therefore, the conclusion that the jobs/skills mismatch overall is worsening is based on hearsay rather than on statistics. Despite all the trends towards longer studies, the number of young people in schools, second cycle secondary and vocational education is going down, for demographic reasons, and this is reflected in the lower numbers of those obtaining qualifications. Furthermore, because technology does not stand still, the qualifications required today are higher than they used to be. Convert and rationalise as they may, most enterprises find that when they have vacancies — whether for apprentices or for highly-qualified personnel — there are fewer applicants to choose from than in the past. Sample surveys show that even offering to pay well over the odds is no good; the skilled labour simply is not there.

Some directions for an active policy

What conclusions are to be drawn from this very rough assessment so far as training, the labour market and businesses are concerned?

Even though labour market projections based on statistics have to be used with extreme care, they are still of value in that they at least reveal the scale of the labour market problems that are likely to arise, so that those problems can be considered.

In taking steps to increase enrolment in all forms of education so as to enlarge the supply of skilled labour, the following parameters come into play: access to schooling, success rates in moving up from one cycle to the next and in obtaining the end-of-course qualification. While admittedly Swiss educational statistics show a considerable improvement in all these parameters in 1986/87 as compared with 1978/79 (Table 13), there is still some untapped potential, especially among girls as the figures in Tables 7, 8 and 9 suggest, and among adults of both sexes.

Another aspect that we shall be mentioning hereunder in connection with this question of increasing the supply of skilled labour is the "potential reservoir of talent" in the cantons where education is less developed and among migrant groups. Given that the examiners will not always have the opportunity to revert to this subject of global strategies, these are therefore described hereunder, together with recent measures along these lines taken at federal level.

Targeting girls and women: The 1988/89 OECD Economic Survey of Switzerland stressed the importance of additional measures to give women more opportunities to train or retrain, especially after a first interruption of their working life: "... women will replace the ever-growing number of elderly people only if they are afforded the same career opportunities. This will be an important factor, especially if sectoral labour shortages worsen. The large and persisting disparity between male and female average hourly wages — over 30 per cent — is at least partly ascribable to the marked differences in the pattern of male and female employment" (p. 86).

"Whether or not women become economically active depends on many factors that the government can influence to some extent. Specific measures could be implemented to ensure equal economic opportunities for women and to lower the opportunity cost of their taking a job. Thus, the reductions in the rates of federal and cantonal tax on female marginal earnings in recent years or the provision of child-minding facilities, even when provided at a charge, are likely to make paid work outside the home more attractive" (p. 86). "Policies to increase female participation in the labour market should be supplemented by specific measures to encourage child-bearing (more generous family allowances and tax relief, introduction of maternity insurance, maternity/paternity leave, etc.) in order to mitigate possible negative effects on the birth rate" (p. 86). Furthermore, the retirement age for women could be made the same as for men.

In establishing an effective policy in this direction, it has to be remembered that although more girls are entering higher education, they usually prefer to study the humanities, largely for reasons that have nothing to do with education. But there are ways of influencing girls in their choice of subjects to study early on, during compulsory and second-cycle secondary education, by changing curricula and teaching methods For instance, in the Netherlands in 1987 a campaign was launched to encourage pupils, and especially girls, to choose mathematics and science as subjects for their end-of-school exams. The findings of research on this "Choose Science" campaign, published in a report[5] the following year, showed that as a result of it more girls had opted for scientific subjects.

Targeting the cantons where education is less developed and encouraging mobility: The examiners, as they visited the different cantons, found that it was often the standards required and the availability of facilities in the canton that determined access to more advanced education.

Table 13. Enrolment rates[a] for the population aged 16 to 26, in 1978/79 and 1986/87

MALES

Level of education	Year	Age										
		16	17	18	19	20	21	22	23	24	25	26
Secondary level	1978/79	60.2	82.5	78.3	84.6	20.4	7.4	3.8	2.6	2.1	1.6	1.2
	1986/87	62.7	85.6	82.4	59.8	23.9	8.4	4.8	3.4	2.7	2.1	1.6
of which: *Maturité* stream	1978/79	9.7	12.5	11.9	9.1	3.9	1.2	0.6	0.4	0.4	0.3	0.2
	1986/87	11.0	13.3	12.9	10.2	4.0	1.1	0.5	0.4	0.3	0.2	0.2
Vocational	1978/79	47.5	67.3	64.5	43.6	15.1	5.6	3.1	2.1	1.7	1.3	1.0
	1986/87	48.4	69.0	67.1	48.1	19.0	6.8	4.0	2.9	2.2	1.8	1.3
Other	1978/79	3.0	2.7	1.9	1.9	1.4	0.6	0.1	0.1	0.0	0.0	0.0
	1986/87	3.3	3.3	2.4	1.5	0.9	0.5	0.3	0.1	0.2	0.1	0.1
Third level	1978/79	0.1	0.2	1.2	5.1	10.5	14.5	15.6	14.6	12.8	10.5	8.2
	1986/87	0.2	0.4	1.0	3.9	9.6	14.0	15.6	16.3	15.2	13.0	10.2
of which: University, *haute école*	1978/79	0.0	0.0	0.7	3.9	8.0	10.2	10.7	10.2	9.0	7.6	6.0
	1986/87	0.0	0.0	0.6	3.2	7.6	10.2	10.5	10.3	9.4	8.0	6.3
Higher vocational school	1978/79	0.1	0.2	0.3	0.8	1.8	3.1	3.3	2.8	2.0	1.3	0.9
	1986/87	0.2	0.3	0.3	0.5	1.3	2.4	3.1	3.1	2.5	1.8	1.2
Technical school ET, Technicum	1978/79			0.0	0.1	0.1	0.2	0.3	0.3	0.3	0.3	0.2
	1986/87			0.0	0.1	0.3	0.3	0.4	0.5	0.6	0.4	0.3
Preparation for (higher) vocational exam[b]	1978/79			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.2	0.1
	1986/87		0.0	0.0	0.1	0.2	0.5	0.9	1.6	1.9	2.0	1.8
Other	1978/79	0.0	0.0	0.1	0.3	0.9	1.0	1.3	1.6	1.5	1.2	1.0
	1986/87	0.0	0.0	0.0	0.1	0.3	0.6	0.7	0.8	0.8	0.8	0.7

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[a] Pupils/students as a percentage of the resident population of the same age. Differences due to rounding have not been adjusted.

[b] Since the person's age is not known in most cases, the real figure is higher.

Table 13. *(Continued)*

FEMALES

Level of education	Year	Age										
		16	17	18	19	20	21	22	23	24	25	26
Secondary level	1978/79	45.9	62.0	55.8	34.2	16.7	7.1	3.2	1.8	1.3	0.9	0.6
	1986/87	54.3	73.2	65.6	40.9	19.4	9.6	5.3	3.4	2.1	1.6	1.1
of which: *Maturité* stream	1978/79	8.9	9.9	8.9	5.8	1.9	0.4	0.2	0.2	0.1	0.1	0.1
	1986/87	11.6	12.3	11.6	7.8	2.4	0.5	0.3	0.2	0.2	0.2	0.1
Vocational	1978/79	29.7	43.5	37.9	22.6	11.2	5.5	2.6	1.5	1.0	0.7	0.5
	1986/87	34.9	52.7	47.1	28.0	13.8	7.6	4.4	2.8	1.7	1.3	0.9
Other	1978/79	7.3	8.6	9.2	5.8	3.6	1.2	0.4	0.1	0.2	0.1	0.0
	1986/87	7.8	8.4	6.9	5.1	3.2	1.5	0.6	0.4	0.2	0.1	0.1
Third level	1978/79	0.0	0.0	0.8	3.7	6.2	6.3	5.6	4.6	3.8	3.2	2.4
	1986/87	0.0	0.1	0.9	4.1	7.3	8.4	7.9	7.2	6.1	4.9	3.9
of which: University, *haute école*	1978/79	0.0	0.0	0.6	2.8	4.6	4.7	4.4	3.7	3.0	2.6	1.9
	1986/87	0.0	0.1	0.6	3.1	5.6	6.4	6.1	5.3	4.7	3.8	2.9
Higher vocational school	1978/79		0.0	0.0	0.1	0.2	0.4	0.3	0.2	0.2	0.1	0.1
	1986/87	0.0	0.0	0.0	0.1	0.2	0.4	0.3	0.2	0.2	0.1	0.1
Technical school ET, Technicum	1978/79			0.0	0.0	0.0	0.0	0.0	0.0	0.0		
	1986/87			0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Preparation for (higher) vocational exam[a]	1978/79		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
	1986/87		0.0	0.1	0.3	0.5	0.5	0.5	0.6	0.4	0.4	0.3
Other	1978/79	0.0	0.0	0.2	0.7	1.4	1.2	0.8	0.7	0.6	0.5	0.3
	1986/87		0.0	0.1	0.6	1.0	1.2	0.9	0.7	0.6	0.5	0.5

a) Since the person's age is not known in most cases, the real figure is higher.

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They did not have time to analyse in detail the effects on schooling of socio-cultural differences from one canton to another, or to investigate the possibilities, in cantons with lower education participation rates, of adding to the skills pool.

We shall mention here only the general conclusion of a recent study on disparities in respect of access to university:

> "The generally higher level of training to be observed in Switzerland as in other countries is reflected, at higher education level, by higher university attendance rates. Nonetheless, opportunities are still very far from equal, depending as they do on students' sex and social class and on whereabouts they live."[6]

Where we have been able to make comparisons over time, it appears that these disparities are increasing rather than lessening. The only exception to this rule is that women seem to be gaining some ground, though still only a little and not as rapidly in some cantons as in others or, indeed, in all parts of the country, as can be seen by looking at the figures for women from the more remote mountain areas.

It may be supposed that the different factors of inequality (sex, social class and place of residence) all come into play and sometimes combine, significantly reducing a student's chances of reaching university. Currently it is impossible to measure probabilities of this type, and to our mind that is one good reason why, even if it means whipping up political will and treading on federalist toes, Switzerland's school and university attendance statistics system ought to be upgraded, and the sooner the better.

In addition, it can still be hard for pupils or students from one canton to get to an educational establishment in another canton, even if that establishment is quite nearby. If policies to overcome the shortage of skilled manpower and draw heavily on unused potential capacity were to override cantonal restrictions, inevitably a whole series of measures to increase intercantonal mobility would have be taken in respect of school organisation and education policy.

As regards choice of training and career guidance, excellent counselling services are available. A central agency publishes a periodical and a review entitled *Etudes et carrières*. While career guidance counsellors are naturally able to transcend the cantonal framework, it may well be wondered if a country-wide view of all training and career possibilities, embracing the Confederation as a whole, in fact exists. Is it even always wished for? Only too often the idea persists that anyone who gains very high levels of qualification will want to quit the canton, or that certain cantons, known already as magnets, are being still further advantaged. From the national standpoint, this narrow-minded attitude is a factor in lowering the rate of access to training and economic activity that could otherwise be achieved.

Targeting migrants' children: To complete this catalogue of measures to overcome the shortage of skilled labour, we refer here to the steps that ought to be taken in respect of the training of immigrants. First, as we point out below in discussing adult education, helping foreign children to prolong their studies will depend on educating their parents, as a Federal Commission set up to consider the matter concluded in 1986 in its report "Further training for foreigners".

From this standpoint, it is clearly essential that in the schooling of children with a foreign mother tongue the recommendations of the CDIP — and especially those set out below — be put into effect:

- "Pre-school age foreign children should be helped to fit into Swiss society by being given the opportunity to attend kindergarten schools for two years";
- "Instruction in the language spoken locally should be provided free of charge to pre-school age foreign children" [this recommendation applying to German-speaking cantons only];

- "Parents should have a voice in the integration of their children into Swiss society and should be consulted by the competent education authorities on all questions of importance";
- "Intercultural contacts and education at all levels should be permitted and, if necessary, subsidised".

In the course of our visit, earlier findings[7] concerning the schooling of migrants' children were confirmed:

- difficulties in learning a second language;
- repeated falling behind at school;
- unacceptably high proportion of migrants' children in special classes;
- unacceptably high proportion of migrants' children in the lower expectation levels of primary education;
- unacceptably small proportion of migrants' children acceding to education beyond compulsory schooling, including vocational training in the dual system.

Patently there is here a vein of potential skilled labour, as yet untapped, of which advantage could be taken in the framework of a policy that set out systematically to raise the level of qualifications available on the labour market. Another alternative would be to recruit young apprentices from the frontier zones to fill the growing surplus supply of places compared with the number of students that are potential candidates for this type of training.

Since 1980, for example, except for one year the apprentice recruitment rate has been lower than the economic growth rate (see Figure 2) and the forecast for 2nd cycle secondary education (Tables 11 and 12) indicate a further decline in the size of the age group concerned.

In this connection it is worth mentioning the efforts being made by the border cantons (Ticino, for example) to recruit apprentices from outside the country, train them, gain from their contribution to the economy and possibly even benefit from their more permanent presence after this training.

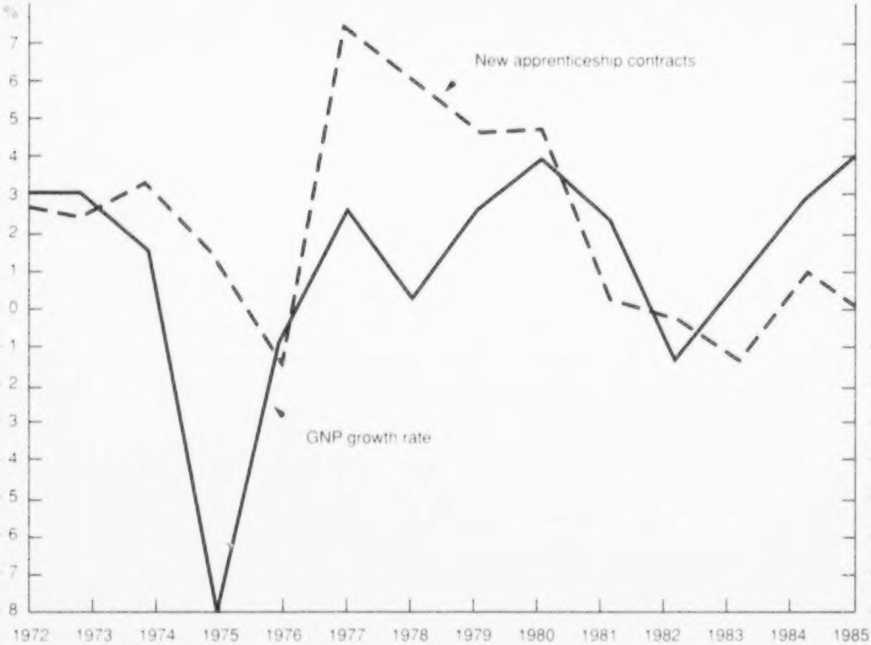
Targeting adults in general: Initial education policy must never lose sight of the further goal of lifelong training, tied in with working life. There is no doubt that a better combination of initial and adult education would help overcome Switzerland's skills shortages.

Older workers tend to move on less easily from job to job and from place to place, and there is a danger that this may hamper technological progress. It may therefore be worthwhile to develop continuing vocational education systematically for other labour force groups, so that the pool of skills can be enlarged to meet requirements. Such a policy may also help bring back on to the labour market specialists who have reached retirement age but would like to go on working, perhaps part-time.

The policies followed by businesses, which remain to be considered, fall outside the scope of this report. It may be said, however, that although business strategies consisting in automation, reorganisation of work patterns and other ways of raising productivity may initially and in part overcome the shortage of qualified personnel, in the long run they create yet further skills requirements. And the same applies to the solution of last resort open to firms faced with labour shortages in Switzerland, i.e. to move abroad. If, as is logical, it is accepted that these firms must continue to be controlled from Switzerland, it follows that the corresponding (international) training of Swiss specialists will be absolutely necessary.

All in all, therefore, it would appear that adjusting the supply of labour to match the different levels of qualification required will depend increasingly on adult training to complement and sometimes necessarily replace the initial training of dwindling numbers of young people, though of course Switzerland's initial education and training system will still have to manage in as efficient

Figure 2. **GNP growth and the number of new apprenticeship contracts**



Sources: *Jahresspiegel der Schweiz*, ed. "Wirtschaftsforderung", 1985, page12.
La vie economique, April 1986, page 211.

a manner as possible the "stock" of young pupils and students of whom the country stands in need.

Recent federal measures

Given the targeting of the dynamic labour policy outlined above, the examiners can only applaud the steps taken recently by the federal government in the directions indicated. Parliament recently approved a series of special measures proposed by the Federal Council on 28th June 1989 in line with its statement on the "Action Programme for Training/CIM". The programme, which is to span a period of six years, was originally given a budget restricted to SF 375 million, a sum which Parliament recently voted to supplement by a further SF 24 million. The plan is to promote continuing vocational and university training in order to develop CIM (Computer Integrated Manufacturing) techniques.

It is worth noting that "The Confederation, apart from performing those tasks incumbent on it, will play a subsidiary role, taking action only in instances where a fillip is needed and where there is no danger that government intervention may impede the smooth running of supply mechanisms”[8]. This will make it possible “to carry out projects too costly for cantons or third parties that could hardly be undertaken as and when necessary without assistance from the Confederation”. Firms and agencies which receive grants are, moreover, required “to ensure that when the special programme comes to an end, training measures can continue to be implemented in the long term, assisted only by the grants normally provided”.

The SF 399 million voted to finance the programme will be spent as follows:

- SF 162 million on vocational further training;
- SF 102 million on CIM;
- SF 135 million on continuing training at university level.

Of the latter SF 135 million, SF 15 million are to cover Swiss participation in the European programme COMMETT II. Where CIM is concerned, the aim is not only to help Switzerland catch up with its main trading partners but also, in the longer term, to raise productivity in the sectors concerned.

But to our mind it is the sum of SF 162 million earmarked for vocational further training that is the really important milestone on the road that will eventually lead to an increase in the potential supply of skilled labour. The money will be spent in the following ways:

- SF 90 million on upgrading advanced technical and commercial training establishments whose capacity is at present inadequate;
- SF 15 million on helping more women and foreign students to gain access to higher education;
- SF 15 million on further training of already skilled workers;
- SF 15 million on enabling unskilled people to acquire a qualification;
- SF 15 million on helping people, especially women, who have left the labour force to return to work by making retraining more attractive. Of this sum, SF 2 million will be spent on campaigns to inform the public and raise awareness of the need for lifelong training;
- SF 10 million on training and further training of teachers in vocational education.

The examiners noted with interest that the sub-section of the programme concerned with continuing training at university level is to devote 1 per cent of its budget to the evaluation of results. In view of the importance of the package as a whole for future policy, and of the level of funding involved, the examiners hope that the other sub-sections, too, will be carefully monitored, both by the Confederation and, in order to uphold the subsidiarity principle, by the authorities and institutions directly responsible for putting the measures into effect. Assessment of this kind, used as an input into wider-based and more systematic investigation of demand for skills at all levels, could little by little bring about a clearer understanding of the way in which Swiss society could best meet the new economic, technological and cultural challenges facing it today. These specialised studies would, of course, have to be part of a steady, more widely-based upgrading of all education and training statistics in the context of the plan set out by the competent Federal Commission in its 1983 and 1990 reports on statistical and analytical requirements. And lastly, the examiners wish to stress the important role that this whole enterprise, managed jointly by the Department of Public Economy and the Department of the Interior via their specialised office, could play in strengthening the cohesion of the federal institutions responsible for the development of education and training provision throughout Switzerland.

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Chapter 3

IMBRICATIÓN AND NATURE OF THE AUTHORITIES IN THE EDUCATION SYSTEM

Management of education under the federal system

The Swiss Background Report details the characteristic features of federalism in Switzerland and its implications for the management of the education system. We shall therefore limit ourselves here to pointing out a few key elements which have a fairly marked influence on the education system at the present time.

At Confederation level

It should be stressed at the outset that, unlike other education systems managed according to federal standards (United States, Germany, Australia, Austria), there is no federal Ministry of Education. It should be recalled that, generally speaking, federal ministries have very limited control over the management of schools, this being the responsibility of the states constituting the federation. Federal ministries are more concerned with policy considerations, the general framework for educative action, the stimulation of necessary reforms, compensatory and redistributive action.

This does not mean, however, that no responsibilities are attributed to the Swiss Confederation. This responsibility is exercised through a number of entities generally called "offices", within larger federal ministries. For example, the Federal Office for Education and Science (OFES) comes under the Federal Department of the Interior, and the Federal Office for Industry, Arts and Crafts, and Labour (OFIAMT) comes under the Federal Department for the Public Economy. Thus, within the federal structures themselves there is a first compartmentalisation of tasks: the OFES is concerned in particular with research policy (hence also educational research), university policy, *maturité* policy at federal level (and hence indirectly with the orientation of pre-university secondary studies and examinations), study grants and international co-operation, while the OFIAMT is responsible for vocational training policy.

In addition, the Confederation exercises other responsibilities. For example, at the Federal Department of the Interior the Federal Social Insurance Office (OFAS) provides financial support for special education, while the Federal Office for Cultural Affairs (OFC) supports Swiss schools abroad as well as a part of adult education. The Development Co-operation Directorate (in the Department for Foreign Affairs) is in charge of the aid policy for developing countries, which includes education and training at all levels.

With the exception of its direct management of certain federal higher education institutions, the main role of the bodies at Confederation level is to establish a framework for action and to analyse the results, for, under the Constitution, the cantons are responsible for education. Article 3 of the Federal Constitution states that "the cantons shall exercise all rights which are not delegated to the federal authority", but as the Constitution only allows the Confederation a few specific tasks, the cantons reign supreme over most of the educational organisation.

It is worthwhile recalling here that at the beginning of the 1970s a "popular initiative" proposed that broader powers should be given to the Confederation. The proposal was narrowly accepted in a popular vote in 1973, but was refused by the majority of cantons. On the other hand, there was a majority in favour of giving the Confederation greater powers in the field of research.

Another characteristic of federal systems is the possible creation of a structure where federal and state education authorities can meet. This is the case for example with the *Bund-Länder Kommission* in Germany. The only Swiss structure that approaches this model is the Swiss University Conference (CUS) in which the Confederation and the cantons are represented, but necessarily with a third partner: the universities.

There is thus no real formalised direct meeting place other than the CUS which is concerned solely with universities. Other levels and types of education do not, as yet, belong to any such entity where dialogue would be formally established between the Confederation and the sovereign cantons. But this does not mean that representatives of these two entities do not meet: they have occasion to do so in the many formal and informal commissions and groups that they have themselves created, generally ensuring that all the partners concerned are represented.

At cantonal level

A sentence in the Background Report perfectly sums up the context of educational development in Switzerland: "the cantons in fact consider their sovereignty in educational matters as a vital element in their political and cultural identity". Whatever the limitations imposed by confederal regulations, it is considered that the liberty of action nevertheless remains considerable.

At cantonal level we find a segmentation of the authorities responsible for education. In some, as at confederal level, those responsible for vocational training come under the Public Economy Department. As in other countries, the Departments of Social Affairs, Public Health, Agriculture, etc. run their own networks of schools. In certain cantons, we find alongside the Public Education Department an "Education Council", often elected by the cantonal parliament and responsible above all for matters of school organisation.

If we add to all this the fact that teachers traditionally have a right of "intervention" (participation), to say nothing of other partners who may possibly see their role institutionalised, such as trade associations, it is clear that the direction and management of education is extremely complex. The cantons may also have a policy of delegating powers to other bodies, such as the communes or private law associations.

The field of vocational training illustrates more particularly the subtle and traditional equilibrium between three entities: Confederation; cantons; enterprises and trade associations. In accordance with the spirit and functioning of the Swiss legal system, these entities do not exclude one another, but are called upon to collaborate, making full use of their complementary competences. It is the promotional framework established by the federal law on vocational training that recently made it possible to launch initiatives and reforms in the vocational training system like those mentioned in Chapter 2.

Another characteristic of the Swiss legal system is the clear distinction between public and private law. Public law sets the fundamental competences and responsibilities of the federal and cantonal authorities and of the other actors in vocational training. These competences not being exclusive, they leave a great deal of latitude for the initiative of trade associations. In accordance with this spirit of subsidiarity and the principle of contractual freedom, some areas of vocational training practice come directly under private law, notably those concerning certain aspects of apprentices' working conditions.

The following table, taken from the Background Report, sums up the powers and responsibilities according to the level of education.

	Pre-school	Compulsory schooling	Vocational training	Secondary II	University
Powers					
Legislation	Canton	Canton (Confed.)	Confed. (Canton)	Canton (Confed.)	Canton (Confed.)
Execution	Canton Commune	Canton	Canton Trade association	Canton	Canton Confed.
Bodies responsible	Commune	Commune	Canton Commune Trade association	Canton Commune Private	Canton Confed.

Inter- and supra-cantonal level

Over a period of very many years, the cantons have gradually come to make arrangements between themselves to meet first of all the need to exchange ideas on the organisation and functioning of their own education systems, then the need to conclude a number of agreements, possibly based on either the standardization of certain elements of the systems considered or the acceptance of a common policy in very strictly defined fields.

Intercantonal collaboration was built up over many years, but not until the mid-1960s did thoughts turn towards structuring it more firmly on a clear legal basis, the "concordat of school co-ordination" signed between the cantons in 1970 "for the purpose of developing the school and harmonizing the respective cantonal legalisation" (art. 1). It seems to us to be important to cite fully the articles corresponding to what are designated the "basic arrangements". Article 2 sets out the "obligations" which are now fully implemented:

"The concordatory cantons decide to co-ordinate their school legislation in the following manner:

a) The age of entry to compulsory schooling is set at six years old by 30 June. The cantons retain the possibility of advancing or retarding this date by up to four months.

b) The duration of compulsory schooling is at least nine years, for boys and girls, with a minimum of 38 weeks per year.

c) The normal duration of schooling from entry to compulsory schooling to the *maturité* examination is at least 12 years and not more than 13 years.

d) The school year starts in all cantons on a date between mid-August and mid-October."

Article 3 is no longer concerned with "obligations", but with "recommendations", i.e.:

"The concordatory cantons draw up recommendations for all cantons, notably in the following fields:

a) core curricula;
b) common teaching material;
c) free transition between equivalent schools;
d) transition to secondary cycle;
e) recognition at intercantonal level of school-leaving certificates and diplomas obtained through equivalent training;
f) uniform designation of the school cycles and types of school;
g) equivalent teacher training."

It is interesting to note the following recommendation at the end of this article:

"The Swiss Conference of Teachers' Associations will be consulted when these recommendations are drawn up".

Article 4 covers another field: "co-operation":

"The concordatory cantons co-operate with one another and with the Confederation in educational planning, pedagogical research and school statistics.

To this end:

a) they support and develop the institutions necessary to this co-operation;
b) they draw up guidelines for the establishment of Swiss school statistics, annual or periodical."

The other provisions, of an organic nature, are concerned with the concrete details of this co-operation, in particular:

- the role of the Conference of Cantonal Directors of Public Instruction (CDIP) in the execution of the above tasks;
- the creation of four regional conferences to serve as consultative bodies to work with the CDIP and as a means of developing co-ordination in school matters in the cantons concerned (French-speaking Switzerland and Ticino, north-west Switzerland, central Switzerland and eastern Switzerland).

The flexibility of the institution is to be noted, allowing as it does a consultative role to cantons that have not signed these engagements (non-concordatory cantons) when discussing matters covered by the Concordat. Ticino is the only canton now in this position.

In order to exercise the powers delegated to it, the CDIP can thus obtain the aid not only of the regional conferences, which have gradually become an obligatory intermediary between the CDIP and the cantons, but also of specialist "horizontal" commissions (pedagogic commission, grants commission, etc.), all run by a permanent secretariat which has expanded over the years in order to be able to prepare increasingly complex texts and legislation. The flexibility of these institutions can also be gauged by the fact that the bilingual cantons can have a double representation on the regional conferences and the Secretary-General of the CDIP personally attends the meetings of the regional conferences, which are themselves consulted on major questions even before the cantons. Although this level of co-ordination has thus gained an essential position in the organisation chart of intercantonal co-operation, it should be noted that while these instruments are well adapted to Swiss reality, they are more or less structured and more or less substantial depending on the region, as they may be required to fulfil their implicit, if not explicit, mandate. It should also be pointed out, as will be reiterated, that since 1962 a series of specialist institutions have been created by the cantons, or jointly by the cantons and the Confederation, meeting the specific needs of co-operation (teacher training, research, pedagogic documentation, school support, etc.), financed on the basis of equal contributions or subsidised by the Confederation.

After this brief presentation, we should like to subscribe to the initial appreciation of the Background Report itself concerning the decision levels in education, i.e.:

> "On the whole, ... the decisions in the field of education are taken by numerous and multiple levels and bodies. The distribution of responsibilities is above all the result of historical factors and does not always correspond to an internal logic. All in all, the system thus seems to lack transparency and coherence."

This situation is illustrated by Diagram 2 presented in the summary of the Background Report (Part Three in this volume).

Finally, before closing this section we would like to recall that on top of this complexity of institutions there is a complexity of quite a different sort which results from Switzerland's history and deeply-held values. As the Background Report points out:

> "The principles of direct democracy are firmly anchored at federal level, but even more so in the cantons and communes. Thus the members of the parliaments and of the governments (with the exception of the Federal Council), and some senior civil servants, are elected by the citizens. The latter are also called upon by the state or at the request of a certain number of citizens (initiative and referendum), to vote on questions as important as laws, taxes or credits".

The detailed history of the last 20 or 30 years of school policy shows that on many occasions, various projects which, it must be hoped, had a certain merit since they had already been filtered by the experts, the obligatory partners, and even the elected representatives, were finally rejected by the "sovereign people". Thus, there is in Switzerland, in this precise field as in others and at the different decision-making levels, coexistence of representative democracy and direct democracy, which is not without the risk of conflicts of legitimacy with respect to decisions on education.

The education system and federalism

Swiss pragmatism

Much has been said about "Swiss pragmatism". It is well known that mountain peoples are concrete and practical, and do not like vague concepts or too much talk. Above all, they are inclined to action: not precipitate but thought out, always moving cautiously and with a margin of safety.

Swiss pragmatism moves in stages from what is known, close, neighbouring, to what is less known, distant, strange (or even foreign). The maximum of alliance, co-operation, comfort (*Gemütlichkeit*) is achieved at home, in the village or in the valley. The frontiers of the canton are already the frontiers of a sovereign state.

This results in some simple empirical rules, applicable to any problem at all. The first is to see the problem in concrete form in a significant example; the second is to approach it not with *a priori* reasoning, but rather *a posteriori*, in a direct manner, through trial and error; the third, and perhaps the most important, is to try to solve it from the bottom up, starting with what is at hand. Only if this is not possible will the aid of others be sought, or the problem will be tackled in a more complex fashion, trying to modify its upstream conditions.

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In everyday life, the Swiss try to resolve their problems at the level of the commune, or the professional association (a memory of the old *Zünfte* "guilds"), and only if this is not possible will the support of other communes be sought, the next step being that of going to cantonal level. In most cases this is enough. Only in extremely important matters is the federal level reached, and always with some regret, as if it were a matter of giving up something jealously guarded. There is fear of the attitude of others who do not see the problems from the same point of view. But naturally the Swiss will accept a compromise: it is virtually his instinctive way of solving problems, and in a sense it means the costs are shared. And then he will strictly and scrupulously respect the engagements entered into.

The most eloquent expression of Swiss pragmatism is found in the way institutions correspond to needs. The approach is never top-down, but quite the contrary, i.e. the authorities and the law confirm what nature and common sense have already suggested. There is no great enthusiasm for anything that comes from the centre. Saturday was made for man and not man for Saturday. It cannot be denied, however, that in many cases old and new institutions coexist (for example, selective types of school alongside comprehensive schools) taking account of different needs.

Perhaps the most surprising product of Swiss pragmatism is the vocational training system. In a country with a high degree of specificity and subdivision, it might be expected that the whole of this sector would be left to local initiative. Not at all. Needs are taken into account in the first place, but very curiously, while the functioning of schools is regulated by the cantons, the vocational training system is regulated by the same laws at federal level.

Federalism is not a dogma, and when there is an opposing constraint, the Swiss can even do without it. The schools respond in the first place to the subjective needs of the children and their families, and as a result can reflect the communal and cantonal situations. Conversely, vocational training is rather fragmented in the different places of apprenticeship, so that it needs to be brought to some sort of unity. The fact is that it responds in the first place to the economic system, which is not only objective, but constantly evolving. Switzerland preserves its past in the schools, but depends for its future on training people for trades and professions, which now embrace the advanced technologies, and these technologies are the same virtually everywhere, delocalised on an intercontinental scale.

Relations between the cantons and the federal level

The education system is one of the essential fields in Switzerland that comes under cantonal prerogatives. At the same time, the trend in the problems arising, and their scale, means there is a need for action at national level. The reality of this duality rests on the idea, frequently stated by the people we talked to, that the education system should be anchored in local realities so that equilibrium and coherence in its functioning can be developed. We would stress that local realities in Switzerland are expressed in the canton, but that the logic of the system gives importance to communal realities and even to specific features of the establishment. This concern with taking decisions on educational matters as close as possible to the grass roots level, with a desire for coordination, leads to a certain type of decision-making system. This system is characterised by the multiplicity of actors at all levels and the importance of interpersonal relationships (this works because everyone knows one another). But this does not exclude, and may even bring about, the development of a fragile kind of centrism, hence hesitant and bureaucratic, and thus by nature incapable of generating projects that will stir people to action.

Certain fields may nevertheless be perceived as having a very centralising influence. Examples are issues concerning the environment, computerisation, or matters more to do with the ethics of a field such as biology. This raises the question of relations between the ethical/scientific position of a nation and its educational dynamic. The decisions on educational matters are, notably due to the autonomy of the cantons, slow, cautious and unanimous. The decisions on ethical or scientific matters (those concerned with a project for the society as a whole) need to be more energetic and more capable of rallying people to the cause. The problem of a country like Switzerland is often that of having to try to resolve in a positive and dynamic fashion contradictions of this type which may lead to immobility or stalemate.

From this standpoint, three scenarios may be envisaged for relations between the cantonal and national levels.

The first hypothesis is that the national level, in its efforts to co-ordinate, inspire and integrate in a European space that is dynamic and at present in the course of construction, will gradually eliminate the dynamic of those cantons that are too small to cope with the problems that arise. In this case the cantons and co-ordination between them give rise to problems of the technical application of a dynamic that comes from elsewhère. Co-ordination between them is thus a result of the administrative (or technocratic) need to solve the problems between entities that are not really "societies".

The second hypothesis is that of a dominant cantonal dynamic. In this case, the cantons function, from the standpoint of their cultural traditions, their language, their socio-demographic composition (town/country, for example), as micro-societies whose juxtaposition forms Swiss reality. In this case, and to the extent that the Swiss education systems are creatures of society, they have their roots in, derive their traditions from, and seek their dynamic in these local factors. The national level observes, and where possible encourages, the co-ordination of these education systems, through promoting experiments likely to be really successful in a canton and spread to others through inter-cultural contact. Decision-making is the result of necessarily very slow processes, of a dynamic where the tradition and culture in which the education systems are anchored mean that experiments are filtered through a multitude of levels and finally that of popular consent. This mechanism guarantees a high degree of acceptance and assimilation of innovations, but at the price of slowness and the continuing existence of considerable differences between the 26 education systems in the country.

The third hypothesis is the more subtle one of appropriation by the cantons and their specificities of the strong and energetic impulses given, in a world where tradition has to know when to give way to innovation, at national level. In this case, the dynamic of the education system operates through the acceptance by the cantons, who retain their specific features, of tasks that might be described as national, such as the tertiarisation of society, the modernisation of industry or the creation of conditions favourable to research. In this scenario, the federal dynamic and cantonal socio-economic forces reinforce one another to maintain, through the education system, the diversity that is an essential feature of the country's identity and gives it the dynamic to enable it to modernise.

In the functioning of the Swiss education system as we were able to observe it, there is no doubt a place for each of these three logics, which makes its analysis particularly complex. This complexity means that it is especially difficult to rethink a Swiss educational project so as to make it an unopposed vector of modernisation. The dominant decision-making process seems to us to be more of a reaction mechanism to the shocks that often come from outside the country or from structural changes in the liberal countries, and which are powerful enough to be felt of Swiss society. These shocks therefore have to be reacted to at both cantonal and federal levels, thus permitting the implementation of the necessary changes in line with the particular tradition of this country.

One may thus well ask whether such a "reaction dynamic" could not be significantly modified by monitoring, forecasting, and hence observing more analytically and more systematically what goes on in the society and its education system. The large-scale use of comparison between cantons would no doubt be a powerful tool for developing a better understanding of the education system, the dynamics that influence it and the numerous potential innovations it carries within it. This is not so much a matter of developing monitoring, a simple recording tool, but rather knowledge that can permeate all levels of decision-making so that they know what dynamic or retarding movements they are at the same time both caught up in and actors in.

Advantages and disadvantages of a certain type of regulation of the education system

The basic principle of the cantonal prerogatives in educational matters in a society with a strong identity cannot be analysed in a simplistic fashion.

It is obvious that the multiplication of cantonal realities, with real cantonal policies in educational matters, is a factor for emulation and innovation. Some cantons that we visited, such as Valais, work very energetically to make their educational policy a vector for modernisation and obtaining an advantageous position in the Switzerland and even in the Europe of the late 20th century. This self-emulation goes right across the board, with the development of high-level vocational schools in various branches of industry, tourism, computer science, etc. Other cantons, such as Neuchâtel, responded to a very serious economic crisis in the mid-1970s by a considerable investment effort in education. In other cases, there was substantial innovation in secondary I, the orientation cycle, with the aim of developing the sense of reasoned choice and responsibility among pupils and their families.

By and large, decision-making as close as possible to the socio-economic realities — canton, commune — increases the awareness of how important it is to the dynamism of the local community to make an effort to train young people. Intercantonal co-ordination (French-speaking, German-speaking) can here be factors stimulating this dynamism through encouraging the extension of innovations rather than having experiments imposed by administrations. It is interesting, for example, to see intercantonal innovations developing in the field of apprenticeship where this appears economically and demographically necessary.

It would nevertheless be wrong to say that this self-stimulation of the cantons leads only to innovations. Quite the contrary, as we have often seen that the cantons exist as a micro-society through the traditions and customs that form their personality. Too great an attachment to the past can but hamper the emergence of change. A given rural canton may have a tradition of apprenticeship based on small enterprises and will not necessarily be inclined to create gymnasiums or full-time vocational schools in new fields. A logic of differentiation may lead certain cantons — in the name of their present socio-educational equilibrium — to neglect and fail to modernise, unlike others, their secondary I orientation cycle, or to develop their pre-school education. Thus, excessive preoccupation with specific cantonal features can be an isolating factor, with each canton concentrating on its own structures, which simply because of their longevity are thought to be optimal. Other blocking factors also appear in relations between the cantonal and federal levels. In many cases it can be seen that the viability and success of an educational reform comes from its officialisation at national level in the form of outline laws or plans. This is the case, for example, with the emergence of diploma schools, which imposed themselves through a long process of negotiation. The fact is that with the aim of relieving the pressure on the gymnasiums somewhat, and offering a broader range of training possibilities at secondary II level, the MIMO Commission in its report published in 1972 called for an in-depth study of the "diploma school", the idea being to promote an autonomous and equivalent type of school throughout Switzerland.

It took sixteen years of work and intercantonal collaboration to establish a uniform framework for this new type of school. The stages listed below are a fair illustration of the way in which the different cantons co-operate in school development in Switzerland:

1972 The CDIP report "Secondary education tomorrow" (MIMO) proposed the creation of diploma schools (EDD) with the aim of relieving the gymnasiums.
1976 The EDD study commission was given the task of defining the common aims of the diploma schools and clearly differentiating them from vocational training.
1977 The study commission presented its report and proposed six different types of diploma school.
1978 A consultation procedure was carried out in the cantons on the subject of the study commission's report. It was decided to reduce the range of EDDs to two models.
1981 New model of EDD with two variants: 2 or 3 years training, leading to jobs in paramedical, socio-pedagogical and administrative fields. The CDIP recommended the cantons to take this latest type of school as a model. A new mandate was given to establish standard curricula, examination arrangements and further training for EDD teachers.
1982 Survey on the EDD situation.
1983 Publication of the report "The EDDs: their state of development".
1985 Presentation of framework curricula and guidelines for the recognition of diplomas. A consultation procedure was carried out in the cantons and schools.
1987 The CDIP ratified the "Directives for the recognition of diplomas issued by the diploma schools". The EDD commission was reorganised in order to deal with all questions concerning EDDs and to study the conditions required for the recognition of the EDDs.
1988 The CDIP committee decided to implement the EDD framework curricula. The recognition procedure began.

There was never any question throughout the political negotiations that finally enabled a consensus to be reached of a root-and-branch unification; the idea was more to reach a minimum basis of understanding. This has taken shape in the "Directives for the recognition of diplomas" and the "Core curricula for the EDD". They do in fact respect the different characteristics of the cantons (for example the range of subjects directed towards the future career or the length of training) but also help to promote the EDD, bringing them closer together. The studies that preceded the establishment of the framework curricula already had this convergence effect in the sense that many of the newly-created schools were inspired by the different projects examined.

Such an affirmation at the level of Swiss society as a whole conditions the vitality of an institution in the cantons, and may give rise to blockage or refusal on the part of these cantons or other even more decentralised entities (communes, establishments). This seems to be the case with the reform of the gymnasiums, which has never managed to attain any level of generality and is in fact limited to a number of individual, sporadic and extremely scattered initiatives. It should be added that these blocking factors may, paradoxically enough, stem from the liberalism of the system itself, through the power of the popular vote, often generated in this prosperous country with very little unemployment, due to the simple principle of the maintenance of equilibria.

It must be admitted that these blockages are never definitive, and as one of our interlocutors told us: "no major and vital reform is indefinitely blocked by the actual nature of the system". It is then — if we admit this assertion — that the problem arises of the slowness or rapidity of decision-making. Slowness is obvious in such a decentralised system. The basic principle, including where administrative structures are substantial, is to convince, to co-ordinate, to negotiate, to stimulate. Even in the vocational training system, which comes under centralised structures, reforms cannot come from needs perceived at national level and from an overall view of the system. In another field, the possibility of teacher mobility, in particular but not exclusively at primary level, some progress is apparently envisaged for the mid-1990s. In a country which is after all small in size, we find a cantonal specificity of teacher training that means, for example, that each teacher training college is a pedagogic entity in itself, and one might say for itself. Access to training for a profession as important as that of nursing is not standardized: some student nurses have passed the *maturité* examination, others not. Another example we noted was that of the creation of an orientation cycle in the canton of Valais. The protagonists of this reform were forced to proceed with considerable caution, and apparently suffer an initial refusal in a popular vote, before finally obtaining a positive result for a reform whose application after all still remains more or less at the discretion of the establishment. Is it not the same, to take another example, with the creation of new university structures, which seem to arise through the creation of colleges of existing universities in cantons without one of their own. We end this enumeration, which may appear facilely critical, by mentioning the difficulty of introducing obviously needed reforms concerned with pluridisciplinarity in the gymnasiums and higher technical schools in order to promote polyvalence and access to the highest levels of the school hierarchy.

This structural slowness in certain fields runs counter to the statement that "no important reform process is blocked by the functioning of the cantonal-federal system". We have also seen, however, that this particular decision-making system is capable of demonstrating an enviable efficiency. It should be noted first of all that, as was pointed out to us many times, consensual reforms engaging many actors at all levels obviously have a particular solidity and are by definition irreversible to the extent that there are no authorities — popular or administrative — that can contest them with any degree of force. This is of a piece with the way in which Switzerland manages to separate the educational debates from the political debates in the partisan sense of the term. There are certainly conflicts and different projects stemming from different groups — trade unions, employers' organisations — but many of the problems arising here are not seen at the level either of the citizen or of government bodies, at least as far as we were able to judge.

The primacy of the canton, or even of the commune, in decisions on educational matters is a guarantee of solidity and can also ensure rapidity when it is necessary to react to crisis situations. We were very interested by the way in which the decision-making authorities were able to manage the demographic fall in the number of pupils due to the fall in the birth rate and the departure of foreigners at the time of the economic crisis. Unemployment among teachers, which could have been an automatic consequence of the fall in the school population, particularly in compulsory schooling, was limited by initiatives that could be permitted only by a decentralised system. A choice that apparently stemmed from the cantons to reduce drastically the number of pupils per class was actually implemented throughout the country.

It is in fact important to note that it really was from the cantons that the decision came, after complex negotiations, to reduce drastically the number of pupils per class. Admittedly, the present size of classes is not the same in all cantons, but the overall trend was remarkably similar. This is all the more surprising in that complex factors, notably financial, were present everywhere, and many actors with differing aspirations and strategies participated in the debate.

The CDIP did not have to give any unifying or standardizing instructions here. On several occasions it formulated recommendations regarding the surplus (or shortage) of teachers and played a role in the dissemination of information between cantons, thus promoting a certain emulation effect.

Many other less fundamental measures were also introduced in association with the fall in the school population: splitting of teaching posts; creation of remedial programmes in schools for children in difficulty; creation of very small classes for migrant children. These measures and many others were decided upon at the very decentralised level of the canton, the commune or even the school, with all the rapidity that is possible through direct contact with the situation on the ground stemming from local economic conditions.

Other rapid and effective steps have been taken in the framework of a decentralised management system in certain cantons and communes hard-hit by the economic crisis. This is the case with the canton of Neuchâtel which lost thousands of inhabitants and had an unemployment rate as high as 10 per cent during the 1970s. In this canton the education system at the same time both managed the crisis by the type of measure described above and initiated a policy of economic revival through education by creating full-time vocational schools and a micro-electronics institute to bring the canton's enterprises and labour force back to being competitive on the world scale. In the canton of Valais, a plan for strengthening the structure of the high-level vocational schools is a vital factor in the development of the canton. This multi-year plan is promoted by the cantonal authorities and goes hand-in-hand with dynamic action in relations with the university cantons. We could add to this list the way in which new training paths were created in the vocational schools once it is seen on the ground, necessarily close, that apprenticeship contracts are being given in enterprises. Still in the field of vocational training, intercantonal training has in many places been able to respond rapidly to the needs of industry in the same fashion as the shortage of pupils moving towards apprenticeship in certain trades and in certain cantons such as Ticino saw the establishment of frontier apprenticeships with Italy.

We have already pointed out more than once the extent to which the education system in Switzerland, through its being controlled by numerous actors going as far as the popular vote, can be very conservative, any long-standing equilibrium tending to be regarded as optimal. It may well be asked — even though this criticism is strongly rejected by economic circles in Switzerland — whether apprenticeship rates of 85 per cent of the cohort in some cantons does not correspond to an education structure incapable of responding to or anticipating the requirements of a modern economy and constantly renewed challenges. But in-house training seems to respond almost automatically to the dynamic of evolution, for enterprises have no wish to train their future staff on technologically outmoded equipment. This does not mean, however, that it would not be wise to seek parallel structures to design and implement pedagogical and didactic improvements, and aim at teaching not only what is required to meet present challenges but also to anticipate future trends as far as possible. Maintaining over 300 apprentice trades defended by trade associations and pressure groups does not appear likely to encourage a strong innovative spirit. The authorities are accused of acting out of respect for old craftsmen who do not understand that their trade no longer has any future, even though this is perfectly obvious. However, recent figures show that virtually all apprentices (97.5 per cent) are in one of 120 trades: other trades, though still appearing in the regulations, no longer recruit apprentices, while yet others have become so highly specialised — though still essential to the economic fabric — that the number of apprentices rarely exceeds about ten for the whole country.

Can such a structure adequately meet the undeniable challenge of the shift towards the tertiary sector? A reply to this question based solely on the list of occupations has to be negative. We would have to go into further detail to find out whether there have been changes in this direction within trades retaining their traditional names, as we were told above all by managers of enterprises of a certain size and with a certain degree of diversification.

There are no doubt more structural reasons for a certain type of education system that retains a remarkably stable structure over the years. We might say that the education system in Switzerland is driven by an education supply very much impregnated with administrative logic, which as everyone knows is very slow to move, and by the habits of families where tradition in the overwhelming majority of cases excludes any forward-looking attitude. One therefore does not get the impression that the structures of the education system are animated by the socio-cultural and economic currents that are running through modern societies at the end of the 20th century. Such an impulse can come, as we have pointed out, only from shocks which are often exogenous and which really shake public opinion to the roots and thus set in motion the administrative structures. This conservatism founded in the social equilibrium that the actors find in the present structures is but little influenced by the economic, technological and organisational challenges encountered by enterprises (which should not be confused with trade associations) or the challenges of a more cultural nature facing the society as a whole. We must point out, however, that we had very little opportunity to study how — notably in the vocational schools — the demand pressure of the more dynamic enterprises is exerted as regards new occupations and new skill requirements. It is to be noted that the biggest firms and state enterprises create their own training schemes that follow the pattern of the dual system while remaining relatively independent of it.

This sort of structural conservatism founded, it must be said, on the very widespread acceptance by the population of the general architecture of the education system, does not exclude a considerable capacity for innovation. We shall return later to the impressive innovation effort that seems to have been made in many cantons in secondary I, where schools and cantonal authorities are virtually continuously inventing new teaching methods and systems of class organisation that manage to combine the mixing of pupils and their selection. These pedagogic systems favour the development of the pupils' personality and of projects built by the pupils themselves or their parents. Such innovations are often linked with those introduced to help the integration of migrants through catching-up or remedial classes in complex integration systems where the school has already played a leading role as regards the first migrations and is preparing to meet the immeasurably greater challenge associated with the new categories of immigrants (Turks, Yugoslavs). This of course involves increasingly complex language learning and this complexity extends to the whole of Switzerland: for example there are 200 000 people whose mother language is Italian in Ticino and 500 000 in the whole country.

Mobile pre-school teachers and multi-level classes are also innovative responses to the demographic problems that in a more mechanical approach would probably have led to class closures.

There is slow but real innovation when regional confederations are created and then activated, whether this be on the initiative of the teachers, as in French-speaking Switzerland or the administrative authorities, as in German-speaking Switzerland. Is it not also innovation to create, as in the canton of Valais and in decentralised fashion, higher technical schools in harmony with those that exist in the rest of Switzerland? In order to understand the capacity for innovation of the decision-making procedures in place, it is obviously necessary to analyse how the progress that is being made, or has been made, in fields which may escape the notice of an observer interested solely in the structures, penetrates the education system. This is the case, for example, with the "extension of the dual training system" to vocational school teachers who alternate between being teachers in the schools and students in the federal training centres, all this being linked with the participation of enterprises to provide high level instructors for these centres.

In our increasingly complex societies, innovation may be assimilable to the management of this complexity and, from this standpoint, the Swiss education system with its twin characteristics of decentralisation and the very active involvement of enterprises in the educative act is a system capable of innovation.

The last point we would like to discuss here is that of rigidity and flexibility. This is obviously associated with the points we have discussed already. The education system in Switzerland is manifestly rigid because it attaches great importance to tradition. This rigidity is not unconnected with the cantonal structure because the cantons tend jealously to guard an identity which is often based more on what they are than what they are to become. This system may also be qualified as rigid when it is observed that the differences between cantons does not give rise to a competitive dynamic between "companies", but rather to the not always dynamic acceptance of technico-administrative solutions impelled if not imposed by the co-ordinators or the federal government. The education system in Switzerland may also be qualified as rigid to the extent that it obtains the approval of the population mainly on the basis of values which, as everyone knows, evolve only slowly, and which include a certain type of pre-university elitism in the gymnasiums which have established themselves as the guardians of a high level of culture that is often outmoded. Values in vocational education are centred on a pedagogy of contact, with the real or with the subject, in a world where professional life is increasingly based on interpersonal relations in an all-pervading and rapidly evolving tertiary sector. Here we find at a very general level the rigid nature of an equilibrium that justifies itself through its very existence. In a more detailed fashion but still at a global level, the regulations that govern the *maturité* examination and the *capacité* certificates required to practise certain professions are not necessary factors that make for flexibility in the system. As regards the certificates for example, we were not able to examine fully enough the extent to which the power of the experts who define the examination regulations might be a rigidifying factor rather than a source of flexibility for the entire vocational training system. It is not obvious that the trade associations and experts ensure that the greater part of the innovations that enterprises have to subscribe to in order to survive in a world of increasingly fierce competition are passed on to the vocational training system. In a very different field, that of gymnasium teaching, it is necessary to bear in mind the vital role played by a university that is no doubt more dominated by its selective logic in terms of extremely long courses than by a capacity to integrate disciplines that would go in the direction of a pluridisciplinarity desired by the majority but still in its infancy and often opposed.

The basic contract within a nation that the education system represents can certainly not be constantly called into question. Nevertheless, in a system like that in Switzerland the rigidities are all too often associated with the legitimation of identities and paradoxically this tendency can but be amplified by the extreme decentralisation of decision-making and implementation.

This decentralisation is by its construction a flexibility factor, in particular, it seems to us, in the pedagogic methods used by teachers who are apparently subject to obligations regarding only the ends, not the means. This flexibility is part of the Swiss pragmatism, which consists in resolving the problems when and where they arise. This flexibility is certainly characterised by the multiplication of decisions which do not necessarily fit into an overall pattern and thus do not weaken the global structure, while making it possible to find procedures that are extremely elastic. This elasticity in the education system in Switzerland in fact seems to us to be associated with its great capacity for the professionalisation and "pedagogisation" of all the economic and social challenges that arise in the course of social evolution. Practically every sphere of socio-economic activity in the country receives a response in terms of professionalisation and training once it manifests itself at a significant level. This virtually structural principle of relations between the education system and society can be realised only if the teachers and the administrative apparatus are capable of responding to change by change. This flexibility in the education system cannot be conceived of course unless one considers the strong imbrication that exists between its actors — highly decentralised and concerned — and the rhythms of a society confronted with change, as are all advanced industrialised societies.

Right throughout this section we have tried to pose and discuss the terms of a paradox. *A priori* it may be thought that a highly decentralised education system would clearly favour emulation, rapidity of decision-making in the field, innovation on the part of actors free to tackle the problems as they arise, and the flexibility associated with direct information on the events and problem-solving methods that do not call an entire system into question. We have tried to show that in many fields and on many occasions this is in fact the case. The specificities are often dealt with in this way while the temporalities of the social rhythm are allowed for. There is great commitment on the part of actors when they accept challenges such as those associated with migrant workers or the increasing need for education, for mixing social classes for selection and equality. However, the very close contact with reality and the great freedom of decision that seems to go hand-in-hand with decentralisation may be factors making for rigidity, protection of what is believed to be an identity, and for conservatism vis-à-vis the realities on the basis of which the actors legitimate their own form of existence. The diversity of systems, instead of leading to emulation, may go together with mutual observation marked by rigidifying distrust rather than dynamising competition. Through its being segmented and anchored in the local realities, the education system is not necessarily, is in fact far from being, a state apparatus powerful and independent enough to extract itself from the social realities that generally make societies cautious in the face of innovation. Co-ordination, persuasion and the establishment of structures that are more technocratic than social are the methods used by the cantons vis-à-vis the communes, and by the federal government vis-à-vis the cantons, in order to obtain the necessary minimum of distancing that makes it possible to give some force and some effectiveness to global reforms in a society that finds its identity in its specificities. These realities are difficult to manage, but they are nonetheless fascinating to observe and understand.

A system structured by interactions between actors

Direct personal intervention

It might be said that in Switzerland "small is beautiful". What we have said about pragmatism, and even about empiricism in the good sense, means that there is a tendency to solve a good many of the problems at grass-roots level. This is a question of power and responsibility: both are better shared by those who not only have to take the decisions but also to manage them, thus being directly affected by the profits and losses.

This is particularly obvious in the conception and practice of bureaucracy in Switzerland. It is at the service of the citizen and not vice versa. Each office is empowered or not empowered to take decisions: if not, it refers the question directly to the appropriate authority without getting at all involved in the question. There is nothing here of the "official channels" so dear to centralised systems, where each process moves slowly through a long series of steps, each of which imposes a delay and makes its mark.

In the life of the school, which feels itself to be part of the local reality of the commune or at very most the canton, the actors are in direct interaction, because the children who are the prime users of the service are also at the centre of the reference framework for parents and teachers, who take decisions in their interest. The individualisation of teaching is one of the salient features of modern pedagogics. Ex cathedra teaching has not disappeared, but it has to alternate with dialogue, individual work and work in small groups.

The examiners were able directly to observe how support is given to children in difficulty. In Ticino they appreciated the work carried out as a team by the teachers of two or three adjacent classes combined together and then split into small groups of children. The combined space and the shared resources form a richer and more varied environment where the children are free to move spontaneously. The proximity of a small elementary computer laboratory and the school library helps to make this school a place for development. Here there is an individualisation that is not in contrast with socialisation but well and truly integrated with it.

Individualisation is not only important for the pupils, but is also vital for the teachers, who should not be crushed by routine. In Aargau we were able to appreciate the in-service training sessions, each on a topic of didactic interest that could enhance individual competence.

As regards the individualisation of educational measures, there is also the parents' contribution. Although conditioned by the marks received by the child, it is required above all when critical choices have to be made, as in secondary I between the academic stream and others more or less close to active life. But it is being increasingly found that this question cannot be settled at the outset. Individual orientation is a gradual process that requires the observation of several variables, and which in practice cannot take the form of a compromise or a transaction to be gradually adjusted. For this reason, the new system of levels and options introduced in Valais (though it coexists with the old system) offers a more flexible approach than that more based on pre-established paths, that is found in many other cantons. The in Ticino is even less predetermining as it is comprehensive and defers the choice until the moment of entry to secondary II.

In any event, relations between parents and teachers remain personal. In certain cantons it has been proposed that there should be institutionalised forms of participation in the management of the school, but there is opposition to the generalisation of this system through fear of an unnecessary duplication of functions. The fact is that democratisation of school management at the institutional level is already virtually complete through the communal administrations. Individual questions, such as those concerning children experiencing difficulties in learning or adjustment, can be more appropriately dealt with through direct contact between children, parents, teachers and support services and individualised action in small groups.

The life of the school is the very faithful reflection of the social environment. Local history and traditions, even the "love of the flag", customs, rites, folk stories, proverbs, are all drawn from sources in which each family can recognise its roots. All this ensures a continuity in fraternal relations and cultural and community life.

Naturally this can also mean "limiting oneself to a narrow reality", but as mass communications media, exchanges and travel, the influx of tourists and foreigners continually bring in other influences, the risk of remaining behind closed doors is reduced vis-à-vis the opposite risk of being completely altered, a risk that is no doubt real and to which the Swiss are resolutely opposed. The human scale of the small village is nevertheless but a limited protection against the homogenisation of the modern media culture and the changes hovering over society.

Interaction between actors

In the preceding section we placed the emphasis on the particular nature of the Swiss administrative system in charge of education as a central institution in public and political life. This administrative system has first of all a particular structure in that it is split up into 26 apparatuses, each of which has its own logic and specific method of operating.

This administrative system also has another striking particularity in the extent to which it fits into a very special process of guiding the "educational policy". This guiding process is characterised by the multiplication of actors endowed with real power, whose imbrication produces — as we tried to demonstrate in the preceding section — sometimes structural and general decisions, and at other times localised and specific ones. The system of action that characterises education in Switzerland is above all a system of interaction where the power is very much distributed and where everyone can claim to have his role to play, depending on the objectives, the time and the place.

This is so in the first place for the pupils who, because of the massive predominance of the apprenticeship system, take vital and individual training decisions that determine their future to a greater or lesser extent. It is important here to recall that the vocational schools are obliged to provide training in a specific field once a significant number of apprenticeship contracts have been signed. This pupil autonomy means that in certain fields and in a more global fashion there are at present more apprenticeship places than candidates, whatever the standing at the macro social and political level of the dual system to which Switzerland is so much attached. Several mechanisms that find their roots in young people's attitudes are at work here. First of all there is the increasingly strongly expressed desire to prolong full-time schooling to the gymnasium or other higher-level schools. This is the "wish" of the best pupils. Then comes the fact that the apprenticeship system does not always manage to attract to the enterprises migrant workers who are above all simply looking for a job and, according to the experts we met, "do not culturally have a clear vision of the apprenticeship system as an obvious entry path". Pupil attitudes here affect the entire position of apprenticeship within Swiss society. They are also affecting its structure with apparently strong pressure in favour of the tertiary sector at the expense of industry. What is more, a youngster's vision of his future working career can change during the course of his training; in which case, apprenticeship becomes either a temporary situation or a "fallback solution for the future". We shall therefore return to the question of the ability of the dual system to respond to the training requirements of tertiary activities and of certain industrial occupations which to a greater extent than in the past make use of abstract capacities. Pupil attitudes can also, in the aggregate, bring about structural changes within the training apparatus as a whole. This is the case for example when pupils prefer to stay on for a tenth year after the end of compulsory schooling, the proportion being as great as one-third in certain cantons. These tendencies towards autonomy, inscribed in the very principles of the training of the Swiss citizen, are reinforced by the philosophy of many orientation cycles in secondary I which aim to develop young people's sense of responsibility in their choices as much as the accumulation of knowledge.

Apprenticeship is not the only sector in which pupil attitudes play an essential role in the way in which education functions as a complex interactive system.

As we have already pointed out, there is pupil pressure for full-time education beyond compulsory schooling and choices have to be made between the gymnasiums and other less prestigious and more specialised schools. The gymnasiums, when they are not extremely selective at the outset, have to manage the curricula of pupils who at least during the first two years consider themselves to be in orientation, but for whom changes of path towards the intermediate schools do not really seem to be fully allowed for by the bodies managing the educational apparatus.

An important point that needs to be stressed concerns girls' training paths. We know two things:

- girls are still in the minority in apprenticeship, though their proportion is growing;
- they are very present in non-vocational post-compulsory studies.

This increasing presence of girls at all levels of education is clearly demonstrated in Table 14 showing the breakdown of age groups according to educational level for men and women in 1988.

It can thus be seen that in the oldest age group, 55 and over, women are much more limited to compulsory schooling only than men (53.5 as against 32.4 per cent), while only 7.3 per cent of the women in this age group have a university or *haute école* education as against 12.4 per cent of the men. If we now look at the 20-24 age group, there is still a greater percentage of women

Table 14. **Level of educational attainment, by age and sex, 1988**

Percentages, except for totals

TOTAL POPULATION

	15-20	20-24	25-29	30-39	40-49	50-59	60-69	69 +
Men								
Level A	69.8	14.8	12.7	14.2	20.2	27.4	36.0	42.5
Level B	30.2	77.9	70.3	64.6	61.0	56.6	50.0	47.2
Level D	0.0	2.3	5.9	6.9	6.8	4.9	3.6	2.9
Level E	0.0	4.9	11.2	14.5	12.0	11.3	10.3	7.3
Total	(2 291)	(2 606)	(2 683)	(4 990)	(4 840)	(3 798)	(2 969)	(2 881)
Women								
Level A	70.6	15.4	17.8	24.2	34.4	46.7	57.6	67.0
Level B	29.5	78.6	71.7	65.5	61.2	48.2	38.7	30.7
Level D	0.0	1.3	2.9	2.6	2.5	1.8	1.4	1.0
Level E	0.0	4.7	7.7	7.7	4.6	3.2	2.2	1.3
Total	(2 269)	(2 611)	(2 892)	(5 020)	(4 815)	(3 832)	(3 306)	(3 926)

SWISS NATIONALS ONLY

	15-20	20-24	25-29	30-39	40-49	50-59	60-69	69 +
Men								
Level A	69.3	10.9	8.8	10.3	14.6	22.0	34.4	41.3
Level B	30.8	81.4	73.4	68.7	66.1	61.8	52.5	48.8
Level D	0.0	2.7	6.6	7.6	7.2	5.2	3.7	3.1
Level E	0.0	5.0	11.1	13.3	12.1	10.9	9.4	5.8
Total	(1 955)	(2 167)	(2 307)	(4 165)	(3 866)	(3 069)	(2 673)	(2 648)
Women								
Level A	70.0	11.0	14.5	21.2	29.6	43.4	55.7	65.4
Level B	30.0	82.8	75.9	69.2	63.7	51.6	41.0	32.5
Level D	0.0	1.4	2.9	2.6	2.5	1.8	1.3	1.0
Level E	0.0	4.8	6.8	7.1	4.2	3.1	1.9	1.1
Total	(1 911)	(2 227)	(2 545)	(4 383)	(4 090)	(3 249)	(2 948)	(3 542)

Level A: Compulsory education.
Level B: Completion of apprenticeship or vocational education, qualifying examination for university study or teacher training school.
Level D: Technical school (ETS, ESCEA and others).
Level E: Higher education.
Source: Office fédéral de la statistique, microcensus.

than men with compulsory schooling or secondary II only (there are still fewer girls than men entering apprenticeships) but the gap is in favour of women for the highest educational levels, D and E (14.7 as against 11.5 per cent).

In view of the shortage of labour, and in particular skilled labour, the rising educational level of girls is an advantage for the Swiss economy that does not seem to be appreciated at the macro-social or broader political level. This improvement is thus taking place according to a haphazard kind of dynamic that is far from ideal for a phenomenon of such importance to the country.

We have discussed pupil attitudes at some length because they seem to us to be the "black box" of the education system's dynamic. On the side of the managing authorities, everything happens as if these attitudes were marked now and for ever by tradition and the usual training paths, whereas in fact many things are changing in complex and poorly understood interaction with the structural reforms promoted at cantonal or federal level.

There is a real lack of knowledge about the enterprises that are after all the priority training places and in which – or from which – we know little about what happens. It would be of the greatest interest for an understanding of the education system in Switzerland to know how enterprises recruit, and necessarily select, their apprentices when they complete compulsory schooling. How are the apprentices trained for little known internal or external orientations? How do training relationships work between the vocational schools and enterprises, and are the periods of time spent by apprentices in vocational school and on the job negotiated otherwise than by "tradition"? One may also ask how firms' needs for young apprentices are satisfied in a period of technological change and widespread competition. Is it a matter of developing skills or of seeking labour that is cheap, but nevertheless efficient, particularly towards the end of the apprenticeship? In the final analysis, the best guarantee of the "seriousness" of the dual system is that there are strong interactions between enterprises, trade associations, the apprentices, who virtually all complete their training courses, and the powerful and highly structured vocational schools. These interactions also include the families, who after all play a vital role in orienting their children towards such and such an enterprise or apprentice master – and not forgetting the fact that more and more parents are becoming aware of the growing "intellectualisation" of certain occupations and are responding accordingly when the time comes for choosing a type of vocational training.

According to what we heard, the role of parents in such a decentralised interactive system is also becoming increasingly important in compulsory school, and especially in secondary I. The growing role of parents in the "policies" and decisions regarding repeats and in the choice of languages and options is an essential characteristic of the complex orientation systems introduced in many cantons. We believe that the role of parents is crucial in the operation, without institutionalised quotas, of an education system at once highly structured and finally very selective. Admittedly tradition, as an organising social fact, plays a major role through the virtually political attachment of families to the dual system of vocational training. However, as in the case of the pupils, it will be of the greatest importance for the future, and it is indeed already today, to understand the types of structuring in family choices, the marked differences between town and country, between industrial and tertiary towns. These factors are important and will become increasingly so unless there is voluntarist action on the part of cantonal and federal authorities to analyse the extension of the period spent at school (for example the average age of students is constantly rising), the choice in favour of a solid general education, the pressure for the modernisation of enterprise pedagogy (in favour of new technologies or new forms of work organisation), etc. As regards the duration of studies, the age at which university students begin, and especially end, their studies is constantly rising, and the same trend is to be seen in initial vocational training, with an increasing number of apprentices having completed an optional extra year at school after compulsory schooling. Furthermore, their seems to be a growing preference for, and more prestige attached to, four-year apprenticeships rather than the three-year or even two-year courses. Certain choices, such as more emphasis on English teaching, are at the heart of the policies that place Switzerland within the European dynamic both as regards the policy of "cantonal societies" and the "subjects" of the education system, pupils and parents. This panorama of the Swiss education system in its highly interactive dimension obviously places the teachers and administrative structures in positions that are specific to the Swiss reality.

The reality of decision-making close to the place where education is delivered has two consequences for the teachers. It gives them what might be considered a certain power in educational action. Educational and pedagogic reforms may stem from school or establishment projects of which the teachers are the architects, and they seem to us to enjoy very considerable freedom. The organisation of combined-level classes with partial fusion of the sections is within the competence of the school management and teaching staff, though admittedly in a context of negotiation and compromise with the administrative authorities which we were not able to study in any depth. Through their team co-ordination and their interpersonal contacts, teachers play a vital role in the construction of teaching sequences extending across pre-school and the primary cycle and between primary and secondary I. However, such positive interactivity seems to function much less satisfactorily between compulsory schooling and the post-compulsory cycles. This is also the case with the transition between secondary I and vocational education. It does in fact appear surprising that, in a system where vocational education has such an important place, teachers in compulsory schooling have such little contact with enterprises or even with the vocational schools. According to what we were told, teachers do have sessions to make them aware of aspects of economic life, but there seems to be no desire on the part of the teachers and even less on the part of the heads of enterprises to organise periods in enterprises where forms of teaching and apprenticeship could be compared, where teachers and apprentice masters could learn from one another, and even confront one another. As regards gymnasium teachers, their position seems to stem from their specialisation which bears the stamp of their university studies. This seems to us to isolate them from the whole of non-higher education while giving them and their institutions a real prestige.

This opportunity to create teaching practices that is given to teachers in a decentralised interactive system is obviously not favourable to the creation of a professional status whose rigidity is often — in other countries — protective. Teachers are recruited by communes for definite periods and are thus subject to conditions of employment similar to those of most workers. We know for example that Switzerland is now one of the OECD countries where the proportion of young people under 15 is the lowest, as shown in Table A.2 in the Annex.

Situations where there was an over-supply of teachers could thus lead to unemployment among this profession. Admittedly it was possible to ease the most difficult situations, but this was through compromises that might depend on the capacity for initiative of an administration itself in close contact with school commissions coming under municipal or cantonal political authorities. In the end, there is a labour market for teachers that tends in the final analysis to rob them of any special status. The regulatory supply and demand mechanism of any liberal system tends to have its effect on both employment and salaries. What is more, over-supply and shortages are unevenly distributed over the country and there can be considerable differences in salary. It must be added that the fact that the teacher is so very closely involved in the local realities in which he exercises his profession, together with the diversity of diplomas, does not facilitate mobility, which is in fact very low. In all the industrialised countries where the imperatives of competition are threatening to invalidate the vision that the social actors have of the future, education systems are being subjected to heavy pressures and demands inspired by concern about the future. This reality can but express itself with all the more force to the teaching body in a very decentralised structure where the educative actions are highly personalised. Urgent demands for further training are made to them, these often being the expression of a demand for greater efficiency.

It is obviously in such a context of considerable personalisation of actions, decisions, and orientation that the work of the politico-administrative structures has to be situated. The rules, rights and statutes are certainly of great importance, but what we might call the educational contract peculiar to each canton or each commune functions on the basis of a very good mutual knowledge of the actors.

Such action presupposes a good personal knowledge of the actors. Here again, we find a tendency to personalisation of action in the designation of groups of supervisors for the training of young teachers, the allocation of the teacher to a supervisor and the rotation of these supervisors. The administration is equally based on the personalisation of relations in the recruitment of teachers for vocational schools. In the case of teachers already in general education, the people recruited are teachers "who have succeeded in the profession" and then receive their training through alternation between the school and the federal training centre. In the case of people with specialist training, they are generally engineers with a certain amount of professional experience and who may have been part-time teachers and thus have a good knowledge of both schools and enterprises.

In all this the person in charge of public education at cantonal level plays a particularly important role as organiser and innovator. Many other examples could be given of this personalisation of the administrative management at cantonal and communal levels. It seems to us important to draw the conclusions and make two comments.

First of all, intervention at federal level may appear to be, and in fact may be, bureaucratic and hesitant in such a context. It is just as capable of "blocking the machinery" by its intervention as of accelerating it. This may be even more so when the federal level is trying to impose regulations and standards where informal arrangements exist. By and large, uniformisation and coordination may be antinomic with the everyday practices that regulate the education system. This is no doubt what explains, for example, the OFIAMT's difficulty in trying to reduce the number of apprenticeship trades and to regulate the number of days pupils spend in vocational schools in the face of the arrangements existing between schools, trade associations, teachers and enterprises. It should be pointed out that these arrangements may lead to excessively heavy workloads for the apprentices. Finally, it seems that the federal level may intervene most effectively and legitimately where the networks of relationships that we have described are incapable of tackling certain problems which would otherwise remain in abeyance.

This action, that might be defined as the negative side of the federal level, can have serious disadvantages. The most important seems to us to be that the State has so far developed an action on the structures or procedures without having the means to regulate action that concerns people. The example of the obstacles to teacher mobility between cantons is very typical of the lack of organisation in the management of human resources in the Swiss education system. This system seems to us to be characterised by a lack in many fields of instruments for managing people (there is apparently uncertainty about such a basic piece of information as the total number of teachers in the country). The major fields concerned are:

- pupil orientation;
- further training for teachers;
- teacher mobility;

- codification of examination methods;
- forward planning of human resources in the broad sense.

We can conclude this section by stating that educational action in Switzerland cannot be defined by the federal level alone. A very particular type of federalism is involved here, which strongly expresses the reality of the micro-societies constituted by the schools, communes and cantons in their sometimes very dynamic and sometimes very conservative aspects. Because of this contrast, federal action is difficult, necessarily slow and experimental in its efforts to establish greater agreement at national level between the parties and greater orientation towards the future for all.

Chapter 4

THE INTERNAL DYNAMICS OF THE EDUCATION SYSTEM

The Swiss education system is at the same time both simple and complex. Complex in the multiplicity of the interactions we have already described in Chapter 3 and which mean that a great many structural forms and methods of action can develop, but simple in its general architecture which we shall now briefly describe.

This architecture is centred on a system of compulsory schooling that covers primary and secondary I for all pupils. This compulsory schooling normally lasts nine years, with an internal structure that may vary from one canton to another (e.g. 6 years primary + 3 years secondary I, or 5 + 4). It is around this pivotal structure that the theoretically optional schooling is organised. It should be added that this pivotal compulsory schooling structure allows for special programmes for children experiencing difficulty, who represented approximately 5 per cent of the total in 1988.

As regards the optional schooling, we should mention pre-school education, which has in fact become universal for the year preceding compulsory schooling and 80 per cent of young children have two years of pre-school.

The most important and complex aspect is obviously what happens after compulsory schooling, where three orientations are available at present. The first is to enter into an *apprenticeship* contract with an enterprise. The contract may be for two to four years, but the "normal" apprenticeship takes three years, during which the apprentices receive practical training in the enterprise and spend one or two days a week in a vocational school where they receive both theory and general education. This orientation towards what is known as the dual system attracts the great majority of any given cohort, some 70 per cent. The young people who successfully complete their apprenticeship (virtually all of them) obtain a certificate of competence (*capacité* or CFC) in one of the 300 trades available. Actually 80 per cent of apprentices are concentrated in some twenty occupations. Juxtaposed, or we might say opposed, to this highly work-oriented option is the very general and highly academic *gymnasium*. This is split into several more or less prestigious streams leading to the *maturité* examination which is passed by only about 13 per cent of a given cohort. It is obvious that more than 13 per cent of the cohort embark on gymnasium studies, and unlike in the apprenticeship option there are many reorientations. These two options constitute the traditional pillars of post-compulsory education in Switzerland. There is now a third, more varied option available, leading to *full-time vocational training* for commercial or industrial occupations, general training or pre-professional schools ("diploma schools"), very varied types of training for the fields of health and social work, and primary teacher training. For the sake of completeness we should add, and we shall return to this in detail, that a certain number of young people with their *capacité* certificate go on — often after a period of work experience — to train to become technicians, managers or engineers in non-university institutions.

The architecture of the education system and the distribution of pupils between the streams and options obviously vary from one canton to another, but it is difficult to obtain any consolidated information. All we have is some scattered information for the six cantons we visited. In the canton of Zürich for example, it appears that 70 per cent of a cohort enter an apprenticeship, while in the canton of Neuchâtel at the end of the orientation year only 33 per cent take this path, while a substantial number go on to full-time vocational schools. In the canton of Valais in 1988 there were 7 600 apprentices, and only 533 *maturité* certificates were issued. In Ticino, 67.6 per cent of young people obtain a *capacité* and 27.6 per cent a *maturité*. In the canton of Aargau the number of *capacités* seems to be very much in the majority and in Uri in the order of 75 per cent.

It is to be regretted that the statistical system did not make it possible to give a comprehensive and comparative picture of the flows of pupils on completion of compulsory schooling and at the moment when entry to active life is decided for the great majority.

Organisation and reorganisation

Switzerland, in the past ahead of many other countries in the provision of pre-school education, introduced a regular system for young children only recently. It has been pointed out that the kindergartens favour the spirit of play, according to the froebelian system, which has also been taken up in original ways by other movements, such as the steinerian one; as for infants' schools and *scuole materne*, though also in a "play" environment, they tend to prepare for school proper.

Now institutions at this level take in almost two-thirds of the cohort concerned in the first year and virtually the entire cohort in the second, which is aimed to facilitate pre-apprenticeship before entering primary school. This has well-known advantages, especially in the case of children of foreign origin who thus have the opportunity of mixing with others at an age when the differences are less, and above all of easily and spontaneously learning the dominant local language, which is the prime instrument for equality of opportunity.

The length of the pre-school day is now limited, but as the families are increasingly becoming nuclear in the large towns and more women are going out to work, the requirement for a longer presence in school may emerge.

The primary school, as shown in the 22 chapters of the SIPRI (Examination of the primary school situation) report in 1986, "has the task of helping each child to develop the aptitudes, attitudes and knowledge necessary to understand the world in which he lives, with the aim of being able to resolve independently the problems he encounters". This aim fits into a global conception of the school which favours contacts and diminishes the hierarchisation of schools and subjects. It has been stressed that the school is a place for development in very close association with the local environment, open to change, but at the same time ensuring the continuity of the essential common standards and values. For this, it is necessary to work in collaboration with parents, associations, and communal and cantonal authorities, have credits to support projects, and also leave room for free choice.

The Swiss primary school has always had a tradition of high quality. The curricula differ according to canton, but around a common base. Timetables are carefully arranged: for each day there is a schedule of "didactic units", or lessons (of 45, 50, 55 or 60 minutes), very often split between the two parts of the day; the class week is between 25 and 30 hours, to which time has to be added for other activities; where there is a school canteen, time spent there is also designed as part of education.

The duration of primary education varies: generally there are six grades, but there is also a four-year primary school (like the German *Grundschule* that is going to disappear) and a five-year one (like the Italian *scuola elementare*). In any event, the primary school today is not the whole of compulsory schooling, which extends to include secondary I up to the ninth grade. The reduced duration of the four- or five-grade primary school is thus compensated by a longer subsequent cycle: in Ticino, for example, where primary education lasts five years, it is followed by a four-year *scuola media*, while in Valais the six-year primary school is followed by a three-year secondary I known as the "orientation cycle".

The Swiss primary school has many opportunities for meetings with all the partners (open classes, reporting sessions, soirées, theatrical performances, exhibitions, organisation of events), but it is also necessary to seek frank and open dialogue with the parents of each child, where each party can defend his own opinions while respecting the powers and responsibilities of the other. This is specially important in the multidimensional evaluation of school results, not so much for selection as for signs of improvements in learning ability and self-assessment, and in order to be able to plan work effectively with a view to attainable goals.

There is one teacher responsible for each class, not only in primary school but also in secondary I where the demands are not high, but in practice there are other teachers who contribute to class activities, above all for special services, optional subjects and integrative activities. The differentiation of methods is particularly marked in the case of children experiencing difficulties, for whom there are small classes.

As a result of the demographic decline and the general reduction in the school population, there are more multi-level classes. In the past this was the marginal situation of isolated schools in rural areas and used to be regarded as a residual phenomenon, but it has now become topical and is giving rise to specific problems. The proportion of multi-level classes is only 4.8 per cent in communes with over 10 000 inhabitants, 8.9 per cent in communes with 5 000 to 10 000, 40 per cent in communes with 1 000 to 5 000 and as much as 81 per cent in mountain communes with under 1 000 inhabitants. It represents 51 per cent of classes in the Jura, 48 per cent in Glaris, 46 per cent in Grisons, 43 per cent in Thurgau, between 30 and 44 per cent in Appenzell and 36 per cent in Berne. Such a widespread phenomenon is not to be underestimated.

The fact is that the real school is a long way from the ideal one. Curricula and books are designed for single-level classes. Even modern teaching aids are not always well suited, because they are produced for activities that cannot readily be carried out in multi-level classes. On the other hand, the pupils in these schools have better communication with one another, positive co-operation between children of different ages, less dependence on the teacher, and good relations with the local environment.

Today the primary school is also being asked to make a considerable additional effort to introduce second language teaching (German in the French-speaking cantons, French in Ticino and the German-speaking cantons) as from the fourth grade. New teaching material has been developed for teaching German in the French-speaking cantons and French in the German-speaking cantons and in Berne and Zürich. This is inspired by the most advanced methods, and the teachers are being trained to use it. If we bear in mind that the majority of pupils in full-time schooling later learn a third language (generally English), or even a fourth (Italian, even though this is spoken only by a minority), it can be said that Switzerland has attained a considerable degree of linguistic internationalisation.

It should also be added that Swiss-German is practically another language for oral communication (*Mundart*) which has to be learned alongside standard German, and that Ticino Italian is also an oral dialect distinct from standard Italian. What is more, the children of other nationalities have to preserve their own linguistic heritage.

Compulsory schooling

Compulsory schooling in Switzerland lasts until the age of 15, but is not homogeneous for all that. Homogeneity is fairly well developed in the primary school, where in fact the situation has been co-ordinated through an intercantonal project, SIPRI. This project lays down the principle of a certain number of needs common to all the cantons, on the basis of which the teachers organise their work. These needs are:

- for the school to be integrated into the local society;
- for this society to share responsibility for the process of innovation;
- for establishments to be given sufficient scope to develop innovative school projects;
- or the globality of the educational process (whereas compulsory education has created internal hierarchies of goals, compartmentalised classes, and education split up into the different disciplines).

The primary school functions according to the principle of a single teacher being responsible for the class, except for the teaching of artistic, manual or linguistic subjects and sports. Tandem teaching is very exceptional and has generally been associated with the problem of a surplus of teachers. It may be applied in the upper primary classes.

The age groups attending primary school are not necessary the same in different cantons. In principle the age range of pupils is 6 to 12 or 7 to 13, but primary education may end at age 10, 11 or 12. We have already pointed out that primary teachers are trained differently according to canton, which causes mobility problems. We would also point out that selection on completion of primary school may be very different, but the general rule is early selection, which may be either compensated or reinforced in secondary I. It seems to us that it is in secondary I that we find the greatest variety in the *modus operandi* of the Swiss school system. First of all in duration: three years in 18 cantons, four years in four, five years in four others. Basel town and Berne have just introduced a three-year cycle and Jura is about to do so, while Vaud has a particular system of its own.

Depending on the canton, secondary I education may be separate or co-operative, and the two types are different in organisation. The trend is towards the co-operative type, organised in a small number of sections with bridges from one to another, with streamed classes for basic subjects and optional classes open to all. One cannot really speak of comprehensive schools, a sort of common core, but many cantons take certain principles from this idea, bringing pupils from different sections together for common courses. Permeability between sections is also strongly favoured. It should nevertheless be noted that the orientation cycles are not in the majority and the majority of cantons have secondary I cycles without bridges between the sections. In the years to come these differences in the types of secondary I education will cause increasing difficulties for Switzerland.

As a rule, however, there are two sections. The elementary section prepares pupils for entry to an apprenticeship, while the advanced sections normally prepare pupils for two paths:

- more advanced vocational training either in an enterprise or in a full-time school;
- gymnasium studies leading to the examination.

In certain particularly traditionalist cantons the junior level of the *maturité* schools is included in secondary I. In some cantons the final years of secondary I are already gymnasium years. The majority trend and that for the future is nevertheless to commence gymnasium studies after secondary I.

It can be seen that while the principle of compulsory schooling is accepted in Switzerland, that of its unity is certainly not. Quite the contrary, secondary I seems to be a "research" ground, without very much co-ordination between cantons. This research can lead to fairly complex and very elaborate systems. This is the case in the canton of Valais for example, where an orientation cycle has been adopted. This cycle constitutes a transition period between primary education and the different post-compulsory paths. Its guiding principle is to develop all the pupil's potential and de-dramatise the transition from primary to secondary. It is at one and the same time a comprehensive system as it is integrated, and selective because there are streams. It was also intended to reduce the failure rate during the whole of the secondary I cycle, something this reform has achieved in fairly spectacular fashion. It should be noted that it was a matter of both convincing parents and teachers, who were afraid of a levelling downwards, and triggering a "psychological click" in the latter, which was apparently successful.

The development of an "anti-repeats" policy is essential in this system and is based on three inseparable pillars:

- parental involvement in the decisions taken;
- anticipation of what might happen to the pupil and reorientation in good time;
- frequent interrogation of the pupils by means of evaluation questionnaires, to encourage them to take responsibility for themselves and establish a personal project.

It should be added that the aim is always to give the mobile pupil his chance, not necessarily with the desire to increase the number of *maturité* successes, but rather to decrease greatly the number of pupils who do not continue their education after compulsory schooling.

The opposition encountered from parents and teachers who feared that a trend towards a comprehensive school would cause a levelling downwards, should not be under-estimated. It was also necessary to convince the regional school council and proceed through experimental stages, while leaving the final choice to the communes.

We also found an innovative procedure in the case of the *scuola media* in the canton of Ticino. The *scuola media* originated in 1976. The reform had two objectives:

- democratisation of studies;
- raising the standard of studies.

The *scuola media* lasts four years, beginning with a two-year observation cycle where all pupils follow the same curriculum, including two compulsory languages (three as from the seventh year).

This is followed by a two-year orientation cycle, which is partly common, partly differentiated. The common part is fairly broad and includes the mother tongue, history, sciences and various cultural disciplines. There are streamed classes in mathematics, French and German. This fairly complex system is supplemented by advanced level classes and optional courses to help with orientation. This system can, of course, conflict with gymnasium practices, because 22 per cent of gymnasium pupils fail at the end of the first year (but is this such a high figure?) and 15 per cent at the end of the second year. This choice in the organisation of secondary I is obviously also connected with the social and economic context, and, according to what we were told, there is a very great demand for schooling (the *maturité* rate is 18 per cent, or higher than the average for the country) and the simultaneous development of a tertiary society that reinforces this demand. The proportion of school-leavers entering apprenticeships is 60 per cent, with a majority in commercial occupations or full-time schools.

It is important to point out that the driving force for this reform was the teaching body and teachers' associations, who got it accepted by the administration, leading to the creation of an evaluation commission including both secondary I and gymnasium teachers.

Secondary I is very differently organised in the canton of Zürich, on the basis on a cantonal school law dating from 1959. After completion of compulsory schooling, the seventh to ninth years split into three sections: the practical school (*Oberschule*); the general school (*Realschule*) and the more demanding school (*Sekundärschule*). Some (about 10 per cent) also go direct to the gymnasium and others to specialist establishments. The majority of pupils who enter one of the three sections go into an apprenticeship on completion of compulsory schooling. Moves between sections are possible, but this involves an admission examination and repeating the year. It can thus be seen that this is no orientation cycle, but a selection cycle, all the more so because the teachers are not the same in the three sections and are more or less specialised.

The same system existed in the canton of Uri, where a final examination at the end of primary school decided entry to the different sections. This examination, abandoned in 1990, is being replaced by a new selection procedure, the three sections still being retained. It is basically the primary teacher who directs pupils to one of them, but parents will have much more say. Allocation will be on the basis of three criteria:

- performance in fifth year primary;
- the primary teacher's overall assessment;
- discussions between teacher, pupil and parents.

It should be noted that the teachers are being given further training to prepare them for their considerably greater role.

It can thus be seen that each canton has its specific way of preparing transition from secondary I to secondary II, with its three components of apprenticeship, gymnasium and full-time vocational schools. There is of course no one-to-one correspondence between the sections of secondary I and the three types of secondary II[1]. On the contrary, it should by noted that an original aspect of the Swiss education system is that apprenticeship attracts — in unequal but significant proportions — pupils from all three sections, hence of different social and academic levels.

It is to be noted again that all cantons are unanimous that pride of place should be left to apprenticeship. It nevertheless seems to us that those cantons that have opted for a more comprehensive type of orientation cycle see it as a way of developing the pupil's personality, capacity for mobilisation and the quality of the choices made. The involvement of pupils, parents and teachers in this orientation is a guarantee of dynamism in the secondary I system and probably of a general raising of the average level of what is learned, even if it means that the best are sometimes hampered in expressing themselves fully, which is not evident. It seems to us that the very selective secondary I systems base their functioning more on intensive work to prepare for the moment the selections are made and a certain passivity or fatality thereafter. We would add that the orientation cycles, unlike the selection cycles, have without any doubt the effect of motivating teachers, improving their ability to work as a team and involving pupils and parents. This can but reinforce interactive practices which are one of the strengths of the education system in Switzerland. It would appear, however, that the terms of the federal regulations on the recognition of the *maturité* certificates may, through the constraints they impose with regard to the selective mode of studies leading to it, tend to block these initiatives in favour of orientation cycles in secondary I, even though this trend would appear to be logically irreversible.

The varieties of structures and the dynamics of secondary II

Post-compulsory secondary education seems to us to be characterised by a paradox.

On the one hand, it is here that the originality and strong traditions of the Swiss education system are asserted. The dominant structure is undeniably the dual system and this system is still thriving, as shown by the table on trends in apprenticeships (see Part Three in this volume).

The number of apprentices has grown regularly (even during the economic crisis years of 1969-75 and 1975-85) and the dual system is attracting an increasing number of girls. On the other hand, it can be seen that the value attached to the gymnasiums — which manage to retain their elitism and their selectivity without this really being called into question — remains remarkably stable. Between these two dominant traditional structures, a number of full-time, non-gymnasium vocational training systems are now appearing and offer training leading to nursing, social work, primary teaching for those without the *maturité*, and a great many middle-level commercial occupations for which training is partly in diploma schools. Only teacher training schools lead to the same level as *maturité* and give the opportunity to obtain the certificate that gives access to higher education. In the case of the commercial schools, for example, there is the possibility of going on beyond the middle level to business studies and management training schools. There is apparently nothing to prevent holders of the *maturité* from entering these schools, which are sometimes close to university standard.

On top of this full-time tertiary sector training following on from compulsory schooling, there are also at this intermediate level full-time trade schools leading to the *capacité* certificate. These trade schools often develop where local or cantonal enterprises are unable to provide training in new technologies. In addition to all these disparate but dynamic schools there are also those founded by large public agencies such as Swissair, the railways, the PTT, which sometimes take pupils who have dropped out of the gymnasium.

It seems to us that these intermediate schools are a fairly natural prolongation of the secondary I orientation cycles. Together with these cycles they constitute what we might call the mobile and often creative (and expanding?) sector of secondary education. It is difficult to know whether these schools are competing with the gymnasium and apprenticeship, or whether they are complementary to them. It would in any event be of the greatest importance for an understanding of the future of the education system in Switzerland to know the extent to which these schools are separate from or in continuity with the gymnasium and apprenticeship. The continuity hypothesis can be defended on the grounds that neither the gymnasium nor apprenticeship are fixed structures and pupils can move for example between sections D and E of the gymnasium or between traditional apprenticeship and full-time schools.

It would also be very important to know for the whole of Switzerland the quantitative and qualitative importance of these schools according to the different cantons (urban, rural/industrial and tertiary) and their influence on the orientation of pupils and the "supply" of graduates to the productive system. This raises among other things the problem of the reasons which have led to the (laborious) creation of the diploma schools and the aims they are supposed to serve.

Social demand for education

If we wish to consider the problem of education supply and demand, it is obviously necessary to stress the fact that 70 per cent of young people of a given cohort enter into an apprenticeship, i.e. finish their conventional schooling at 16. It may thus be considered that families and pupils are not primarily interested in long formal schooling, but rather in the effectiveness of early insertion in the world of work, even if only part-time. This is a deliberate policy, particularly in German-speaking Switzerland: apprenticeship is not just seen as a way of avoiding unemployment, but is accorded great educational value in its own right. These comments on the demand for education need to be qualified in two ways. We have seen that this demand for orientation towards apprenticeship is highly organised through the existence of very watertight sections in secondary I, entry to which is often determined for pupils at a very early age, 12 or 13, after five or six years of primary school, by an examination or by orientation. However, this uncompromising system of selection is tending to disappear rapidly. In cantons where there is an orientation cycle, this orientation/selection is made in a more sophisticated fashion and at a later date, but it is made nonetheless. It would be very interesting to establish a link between the way pupils of 9 to 14 are educated and the proportion of a cohort that enters an in-firm apprenticeship. The tradition of real attachment by families to the dual system cannot be given as the sole reason for its success. In fact, the expansion is primarily due to the quality of the training provided within the dual system and the educational commitment of the firms which hire the apprentices.

We shall also see below that the in-firm system — where the apprentice is also a producer — has a very substantial vocational and pedagogic content. The vocational schools we visited are remarkably well equipped and organised. They have teams of high level, full-time instructors who have an excellent technical and pedagogical training. There are also part-time teachers who, through their "normal" work in enterprises, are very familiar with the most advanced techniques. There are also more practical introductory courses which nevertheless pose a considerable challenge to the pupils. Finally we would add that not all enterprises have a tradition of training apprentices and apprentice masters are specially trained to this end. In other words, apprenticeship is a true source of education, no doubt variable according to the trade and the type of enterprise preparing young people for the *capacité* certificate, and pupils' attraction to the dual system should not be regarded — as we were often told — as simply the result of wanting to get away from school. Apprenticeship has its inherent qualities but it is part of a larger whole where integration follows a set pattern.

We would also add — and we shall return to this point — that apprenticeship can be a springboard — for the best — for non-university training as technician, manager or engineer, hence the basis for a true educational path.

It still remains an open question, however, whether there is at present a potential demand in Switzerland for full-time education that would go beyond the supply actually available in the gymnasiums, trade schools, diploma schools or other vocational schools. The shortage of candidates for apprenticeships pointed out everywhere would seem to be a first indication that this is so. In a canton like Ticino, apprentices come from Italy. A second indication is that at the end of compulsory schooling, which generally lasts nine years, an increasing number of pupils are staying — according to what we were told — to do a tenth or even eleventh year: up to 35 per cent in some cantons, which is a very considerable proportion. What are the additional "orientation years" all about, and where are the pupils put? In certain cases they are pre-apprenticeship years, no doubt intended to help pupils to go into training in the trade, vocational school or enterprise of their choice. In other cases, these years enable pupils to enter more selective full-time schools, gymnasiums or other. It should be noted that a not inconsiderable number of pupils have to repeat their first year in the gymnasiums, or switch after failure to other full-time studies, while just a few turn to apprenticeship. Lastly, some pupils do a full year of language studies, often in private schools. This is not necessarily a rejection of the apprenticeship system but rather perhaps a choice between the merits of the dual system compared with other "educational fields".

The dual system and non-university higher education

It is legitimate to consider the education demand from families and pupils, as we have just done, but we must also consider the way in which the "educative machine" responds to the needs of the economy and of enterprises through the young people emerging from the system. It is here that we find the apprenticeship system as the virtually constitutive response in its functioning to the production of skills needed by enterprises and trainees. It will be remembered that vocational schools are obliged to provide appropriate training once a certain number of young people have signed apprenticeship contracts for precise trades, which may be new ones. This is no doubt what explains why the OFIAMT has the greatest difficulty in trying to limit the number of trades and at the same time why the dual system has been able to adjust fairly well to the needs of the new tertiary occupations, though without being able to break them down as precisely as in industry and craft occupations (the — extremely broad — occupation of "commercial employee" is at present the biggest category in Swiss apprenticeship).

It may nevertheless be asked whether there is not a negative logic in the principle of apprenticeship by trade. On the one hand, there is what might be called a logic of specialisation. The trade associations represent their trade right across the cantons, closely monitoring training standards and methods. On the other hand, the instructors are employed in enterprises and have been trained and work according to a logic of vocational specialisation. They thus supervise the apprentices according to this logic. At the same time, it does not appear that vocational schools have made any great effort to "despecialise" the education they deliver, not even in the introductory courses organised in them. To take an extreme example, how many trainees in the woodworking trades have ever received a basic training in electronics? More generally, one may ask to what extent vocational schools really establish a common core training for several trades that will lead in the third or fourth year to more specialised options. If we mention these problems it is in order to raise the question of the apparently obvious appropriateness of a system of training in and for the enterprise and the real, and certainly the future, needs of Swiss enterprises. The Swiss economy is characterised by a multitude of highly specialised SMEs pursuing a "niche strategy" enabling them to offer their clientele (big industries also) "up market" products in which there is no competition. On the other hand, this specialisation is not without its dangers for the training role of these SMEs, a good number of which appear to be having difficulty in imparting to apprentices the polyvalence required if they are still to remain competitive in a future bound to be full of challenges. Certainly the professionalisation we have already mentioned of all the work activities of the Swiss education system forwards a movement of what we might, perhaps rather lightly, call detaylorisation, but through its trade-oriented logic this does not necessarily reach to modern methods of organisation within the enterprise. We know that the big Swiss firms are taking these requirements into account in their apprenticeship management, but they are very definitely in the minority and are not representative of the normal functioning of the apprenticeship system. The question is whether there is not a risk that what will emerge over the longer term is an inequality of access to certain types of vocational training within the apprenticeship system, depending on whether this training is provided by the larger and more dynamic firms. At the same time, the logic of specific trades can be either a handicap, as we have just seen, or an advantage in the quest for competitiveness through reorganisation and linkage between trades of a broader nature, which would make comparison and mobility more easy.

The dual system is not only faced with the question of the suitability of people trained for a trade for the organisational future of enterprises. It must also address the problem of the production of non-university technical elites — managers, technicians and engineers — for whom a modern economy has an ever-increasing need. This question is all the more important as it does not appear that, with only 13 per cent of *maturité* holders in a given cohort and given the number of drop-outs in higher education, the university is capable of meeting the needs of the market economy for top level qualifications. It is not even certain that the university is capable — quantitatively — of producing the teachers it needs. Figures were quoted to us according to which a high proportion of university teachers were from other countries. In itself this may be a good thing, but it does raise the question of the capacity of the Swiss university to reproduce itself and even more so to provide the highest levels of the economy — industrial and tertiary — with people trained within it.

It is thus essential that the dual system, which simply on the basis of its quantitative importance must have some very good people in it, can offer the latter real and tangible opportunities for educational promotion. In this respect, there are two things that are worth emphasizing: first, the dual system needs to be considered *per se* with all of its qualities and its firmly entrenched position; and secondly, a fact that must be kept firmly in mind is that the training of an apprentice, and thus that of a skilled worker, is tied in with programmes of training provided at the higher level, which means that a great deal of value is placed on the technical function as a whole. The future of the dual system is linked to this process, to the extent that it will continue to attract some of the most ambitious students and give them the chance to advance through the technical education system. Another solution can also be envisaged. This is that the best of the *capacité* certificate holders should benefit — notably in big firms — from internal promotion associated with in-house further training schemes. But this question, crucial as it is, is outside the framework of our review.

We therefore addressed ourselves to the question of how the "production" of higher technical diplomas was constructed on the basis of the dual system. In the first place, there are within the vocational schools higher level sections whose courses are attended by a limited number of apprentices who have a boosted full-time programme. Paradoxically — or logically enough according to the standards of the dual system — employers are not always in favour of such practices which, of course, reduce the amount of time the apprentice spends in the enterprise. From a more general standpoint, the present employment situation is scarcely conducive either to an extension of the period spent in a trade school or to an increase in the time spent in higher vocational education. However, in the longer run the rising standards of employment should justify a joint effort on the part of employers and the authorities concerned to develop more long-term forms of training systematically based on students' work experience and perhaps the use of new training strategies, including new information technologies. What is more, this access to further training beyond the *capacité* level can be organised through full-time schools that follow on from certain orientation cycles, as in the canton of Ticino, where pupils who opt for the *capacité* certificate after the *scuola media* have two possibilities:

- enter an apprenticeship without examination;
- enter a full-time higher technical college.

In either case, a certain number of trainees have the possibility of going on to senior technician or ETS engineer level. In the technical colleges, there are two and a half days of practical work and two and a half days of theoretical studies. This demonstrates the flexibility of the dual system, the underlying principle of which is a variable mix of theory and practice. Access to these schools is governed by the federal law on vocational training, which defines the aims of vocational further training as follows:

> "Vocational further training should aid persons holding the federal capacité certificate and those who have the benefit of elementary training to adapt their basic vocational training to technical and economic change or to extend it, as well as to develop their general education so as to promote their professional mobility and enable them to rise to higher tasks."

There are two paths leading to this goal:

- higher educational establishments, usually official, providing training organised according to the minimum requirements set by the Confederation;
- courses leading to professional and higher professional examinations testing the candidate's level of knowledge. The courses are generally run by private institutions.

Admission to these two paths is by qualification, i.e. a federal *capacité* certificate issued on successful completion of a three- or four-year apprenticeship. As regards the transition from the *capacité* level to higher technical training, the trade associations have the power to organise intermediate and higher technical examinations recognised at national level. These examinations make it possible to check whether candidates have the knowledge required to occupy supervisory posts or fulfil functions corresponding to a level of training higher than apprenticeship. Candidates who are successful in these examinations receive federal diplomas. It is interesting to note that preparation for these examinations is of free format and they can thus be studied for by holders of the *capacité* certificate who are already employed as skilled workers. Courses are organised by trade associations as well as by public and private schools. This transition from skilled worker to technician or engineer probably does much to explain the high standard of the technical staff in Swiss firms. The transition is possible simply because of the existence of the dual system and is one of its major attractions, including for the more gifted students.

Two comments are called for here. First, the federal authorities seem to be totally uninterested in the organisation of this type of further training, even though it is essential if the growing demand of enterprises is to be met. Second, the fact that this training is organised by trade associations can but reinforce, at a higher level, the extreme specialisation by trade which already seems to us to be a source of serious problems for the *capacité* certificate and the employment of its holders in enterprises. The Background Report tells us that in 1987 there were no less than 2 700 people who passed the higher vocational examination and 2 100 the intermediate. These figures look impressive when we consider that there were no more than 300 examination successes in 1977, but somewhat derisory as compared with the 64 000 young people who completed their apprenticeship at the end of 1987. The small number of people studying to become non-graduate managers is all the more regrettable in that this possibility exists, through trade intermediate level examinations for example, only in 33 occupations and in 64 through higher level examinations. Here again there has been real progress, since in 1977 only ten occupations were concerned, but it appears absolutely essential that the heads of vocational schools and trade associations should start to think much more than in the past about the future careers — after the *capacité* certificate — of the 165 000 apprentices who are oriented towards the dual system at age 15, and often much earlier.

It should also be noted that for the supervisory-post examinations the number was 2 200 in 1977 and has increased very little since. In recent years these examinations have been organised in 56 professions, but many hold them only every three or four years, which is hardly the way to ensure a regular supply at a good level of these qualifications essential for firms' competitiveness. In order better to understand this caution, it would be necessary to examine in greater detail the relations between the OFIAMT and the trade associations which tend — in all countries — to have a policy of strict control of supply in the trades for which they are responsible.

The very outward-oriented Swiss economy has an industrial structure that remains strategic and calls upon the education system to maintain its competitiveness. For the moment the country is responding to this call through the dual system (*capacité*) and its extensions. Such a response could quite soon become obsolete unless institutions are developed to ensure that the best *capacité* holders are identified in the vocational schools or enterprises and drawn into stable educational structures that meet the real needs of young people, so many of whom opt for apprenticeship. Another aspect that should be looked at closely is whether the tendency to spend a longer time in education, coupled with the retention in certain cantons of selection at an early stage, does not have an adverse effect as regards the decision to opt for the apprenticeship stream and might in the long run even block the source of production of certain categories of experienced middle and senior management that the Swiss economy will increasingly have need of.

Vocational schools outside the dual system

Although the relevant data are improving slowly, we have already pointed out that the importance now being assumed by schools that directly follow the secondary I orientation cycle for pupils who do not opt for apprenticeship and *capacité* or for the gymnasium is not adequately demonstrated by the federal statistical system. One of the systematisations of the existence of these schools is the diploma school, whose slow process of establishment through a framework agreement (1975-86) has already been described. These diploma schools correspond to a historic trend and the desire in many cantons during the 1950s to establish general education that would go beyond compulsory schooling but be less difficult than the *maturité*. These could be schools clearly aimed at an expanding tertiary sector such as tourism, administration or simply general culture. They also responded to the needs of the health sector and lower levels of the education hierarchy. We would make three comments on these schools:

- First, as time went on they became increasingly successful, which proves that they corresponded to a need, above all in extending the range of training available to pupils;
- Second, the fact that they are often called "general culture schools" tends to indicate that the general education component in traditional apprenticeship is insufficient for certain tertiary occupations, this being sacrificed in favour of more time spent in the firm;
- Third, they correspond, as stated in the Background Report, to a desire to relieve the gymnasiums somewhat. We would interpret this as a very clearly stated wish to maintain the rather closed and elitist nature of the gymnasium.

In any event, in these schools we find a phenomenon typical of a highly decentralised country: a total lack of unity in the training given. This lack of unity can be seen in the curricula and the duration of courses (one to three years). There is just one common feature: they attract mainly girls. It took 16 years of work and intercantonal collaboration to arrive in 1988 at the establishment of a framework curriculum for the diploma schools, and even now the unity is far from complete. However, we should perhaps see this as a dynamic process as the majority of the newly-created schools were inspired by framework curricula developed during the long process of negotiation.

The Swiss Background Report stresses that these schools do not give a vocational education in the strict sense, but through making reasonable demands on the pupils they prepare them for success in a generally non-industrial occupation. There are at present 32 diploma schools in 19 cantons, with a total of 6 500 pupils, which is very few when one considers the size of the cohort (in 1987 there were some 184 000 apprentices), but is a significant figure in relation to the 12 400 *maturités* awarded that year[2].

Many other schools exist in parallel with the diploma schools. It is particularly difficult to describe them, for they are often private schools with no kind of unity between them. These schools are mainly concerned with the tertiary sector and can be divided into two categories:

- schools of commerce;
- other schools in varied fields.

We consider schools of commerce to be those whose curriculum runs parallel to preparation for the *capacité* in commerce, but which offer full-time training, though of course this does not exclude periods of practical work in an enterprise. It is interesting to note that these schools of commerce fit into a fairly coherent path leading from the secondary I orientation cycle to the "schools of higher education for business and administration" (ESCEA). The first ESCEA — tertiary establishments, the equivalent of non-university engineering schools but in the service sector — appeared about twenty years ago. There are at present some 1 300 ESCEA students throughout the whole country and 400 diplomas were awarded in 1987. Growth has been rapid.

particularly since the beginning of the 1980s, the number of diplomas awarded having risen from 210 to 390 and the number of students from 900 to 1 300.

In these ESCEA, students acquire a knowledge of economics and the general culture necessary to obtain a management post in business or administration. Training generally takes the form of a full-time course lasting 6 semesters, but there are also part-time schools where the course lasts 8 to 10 semesters. These courses may interest people already in supervisory jobs. Finally, it should be pointed out that they issue federal diplomas and there is also the possibility, for a small proportion of the students, of preparing for the "business economist" external federal examination. There are at present ten approved ESCEA in the country and a further five are in the course of creation or approval, notably in the cantons of Valais and Ticino.

The other intermediate schools are mainly in the private sector. They are specialist establishments that tailor their training very closely to the needs of practitioners and are generally created on private initiative. Also in the private sector are higher schools of management and schools training computer specialists. Other schools, run by trade associations or enterprises, train middle and higher managers.

In the absence of an in-depth examination, it is difficult to situate the level of all the schools we have just mentioned with respect to the *maturité* or university education. All we can say is that they are developing independently and may be in competition with the two traditional poles of the secondary II cycle and its continuation, the *capacité* certificate and *maturité*.

Links and paths in the education system in Switzerland

In an industrialised country any education system consists of an upward movement of the pupils in the system and a series of forks or even barriers which finally lead to their graduation. The annual number of diplomas is certainly a vital result of the education system, but the organisation of the paths, forks and barriers is just as important for an understanding of the nature of a given system.

From this standpoint we can consider two sub-systems:

- the whole of compulsory schooling, including pre-school;
- the whole of post-compulsory schooling, in which the linkages are often fairly complex.

Fluidity experiments

Right throughout the Swiss education system there is a problem of transition between pre-school and primary, to the extent that 98 per cent of the children entering primary school have had at least one year of pre-school. It is nevertheless important to point out that this transition cannot proceed in the same fashion in all cantons or all regions. For example in German-speaking Switzerland, pre-school is more of a kindergarten based on play with little preparation for the basic primary school disciplines, while in Ticino and French-speaking Switzerland, it is more of an infants' school oriented towards pre-apprenticeship. Generally speaking, and disregarding the quantitative aspects, it is only recently that the value of pre-school education has been recognised in certain cantons, notably as regards the equalisation of opportunities and preparation for compulsory schooling. Pre-school education is particularly important as a factor for the integration, socialisation and transition for migrant children. In certain cantons such as Genève, there are "fluidity" experiments where apprenticeship in the basic skills (reading, arithmetic, language) is spread over the period from age 4 or 5 to age 8, avoiding repeats as far as possible. In cantons like Zürich, special education has been introduced for children experiencing serious problems. In the canton of Ticino, pre-school teachers are not trained as kindergarten teachers but have a two-year post-*maturité* course. The activities are divided into five fields of equal importance: socialisation, linguistic education, development of sensorial perception, expression activities and physical education. In the canton of Valais, education authorities attach the greatest importance to ensuring that primary teachers are perfectly familiar with the pedagogic methods used in pre-school education.

Compulsory schooling

As regards compulsory schooling, the main problem is obviously transition between primary and secondary I. There are in fact two major problems here:

- A different weighting of the educational objectives;
- A different conception of selection, and notably the age at which selection takes place.

The cantons do not all respond to these problems in the same way, even if certain general trends are evident. We have already pointed out that the passage from primary to secondary I can take place in very different ways. The fact that this transition has been organised to varying degrees is obviously not without its consequences for primary education methods and objectives. However, at the same time we know that primary education has been the subject of an intercantonal project (SIPRI) that was based on a certain number of principles, and notably the globality of the educational process. Depending on the case, this principle may link more or less well with the modes of operation of the secondary I cycle. Once the first year of secondary I has become a true orientation year, which is increasingly the case, it seems normal that the last year of primary school should adjust to this situation and above all that contacts between the teachers of the two cycles be as strong as possible. It seems that an effort should also be made to have trainee teachers spend periods in the type of school other than the one they are preparing for. It is clear that the differences that exist between teacher training in different cantons scarcely facilitate comparisons of relations between primary and secondary throughout the country. The pupils in different cantons may thus find themselves — taking the extreme — faced with four compulsory schooling systems arising out of two ways of training primary teachers and two types of selection or orientation cycle in secondary I.

On top of all this, the situation in secondary I teacher training is particularly complex. Most teachers are trained in universities; others in regional institutions, linked or not with universities; still others may have a primary teaching certificate plus several semesters of complementary courses generally followed while in service. If we take into account the different choices on the part of the cantons regarding orientation or selection, it can be understood why secondary I is an area where the intercantonal differences are the most obvious, and even caricatural, in the already complex situation of the Swiss education system. We have already mentioned the importance in such diversified structures of pupils' and parents' strategies. In order to organise the transitions between certain types of primary and certain types of secondary I, it should obviously be necessary, to have an idea of the importance of these diversities in the school and family strategies, to have a better knowledge of residential mobility at a level as detailed as the commune. These questions of mobility and itineraries are not limited to the transition between primary and secondary I. They are also found, again in uneven fashion, within the secondary I cycle. Where we have the perfectly distinct sections of practical school, intermediate school and the demanding school, the bridges between the sections are virtually non-existent. The path taken by pupils is determined the moment they enter secondary I. Where se have more complex and fluid orientation cycles, as in the cantons of Valais or Ticino, the notion of school strategy in interaction with success in studies takes on its true meaning and there are bridges at least during the first two years of secondary I. We should also add that the cantons with orientation cycles do their best to avoid the isolation of "marginal" pupils in special classes, though these still represent about 5 per cent of the pupils in compulsory schooling.

Orientation after secondary I

Towards the dual system

The fact nevertheless remains that in view of the highly segmented composition of post-compulsory schooling, orientation tends to be fairly definitive at age 16. There are two basic choices: between preparation for the *capacité* certificate, or orientation towards full-time education, gymnasium or other. The choices between these two major orientations differ greatly according to canton. An important question not covered in the Swiss Background Report, and a gap we were unable to fill from what we saw, is whether these differences correspond to the socio-demographic composition of the cantons (rural or urban) or their language (French- or German-speaking) or result from the effect of the education system on itself according to the functioning of secondary I.

Whatever the answer may be, the important point is to understand the transition towards preparation for the *capacité* certificate which is the path taken by about 70 per cent of a given cohort. Two things need to be considered in the first instance. These concern the way in which co-ordination occurs between secondary I teachers and those of the dual system, whether they be apprentice masters or full- or part-time vocational school teachers[1]. According to our informants, there seem to be two debates going on.

First of all, those in charge of vocational schools are complaining strongly about the low level of basic — elementary — knowledge of pupils emerging from secondary I. This is no doubt the well-known reaction typical of relations between education sequences, but it is also to be seen as a more deep-rooted phenomenon associated with certain "turbulences" and experiments in the secondary I cycle itself.

Second — and perhaps this is really the same debate — certain actors in the education system point out that, in extreme cases, pupils in the dual system use only a fraction of what they learned in compulsory schooling. This remark is surprising if it is extended to the cantons that organise practical classes in secondary I (the canton of Zürich for example), but less so in the context of cantons where the pupils who go on to apprenticeship come from all sections of secondary I. In any event, it should be added that a significant number of secondary I pupils follow practically-oriented courses that prepare them for apprenticeship, even where there is an orientation cycle as in the case of Ticino.

As regards the transition from compulsory schooling to the system of preparation for the *capacité* certificate, two things are poorly understood. First of all, the way in which pupils decide between full-time preparation (a minority) and the dual system. We have pointed out that certain areas — because of the nature of the local economic fabric — cannot offer training for particular trades in enterprises. This is one explanation. It would nevertheless be interesting to know whether, independently of this reason, there is real competition between the full-time system and the dual system. What should also be noted is the competition that may occur between the traditional dual system and the full-time vocational training schools awarding a *capacité* certificate.

Then there is the question of how pupils choose their trades from the very broad range available. We know that very complete information is provided in secondary I, and knowledge of life in an enterprise is imparted. School and careers orientation is well developed and functions well in all of the cantons within the school system itself. Most schools have an in-house "counsellor" whom students are free to consult. Some of the larger cantons, like Zürich, have set up extensive services and associations exist at national level for co-ordinating the activities of the various cantonal officials. Enterprises and trade associations organise the provision of this information to pupils and the choice of careers is apparently made in the second half of the secondary I cycle. It should nevertheless be noted that supplementary years beyond the normal compulsory course are becoming increasingly common (a tenth year for example). These pre-apprenticeship years are either catching up years or orientation years. It would be very interesting to be able to know more about the content of these years and the way they are organised. However, we know that the average age of the pupils who prepare for and obtain a *capacité* certificate is increasing in most Swiss cantons, though this is also partly due to the fact that some apprenticeships have been extended from the original three years to four years.

Towards secondary II

The orientation of pupils beyond compulsory schooling other than those who prepare for the *capacité* certificate is perhaps even more complex than that leading to the dual system or vocational schools. It will be remembered that in certain cantons pupils commence the gymnasium immediately after primary school without going through secondary I. In other cases, the last year of secondary I is already a gymnasium year for those who have been selected. In the majority of cases, and in line with a long-term trend that began in 1968, the gymnasium really begins at the end of compulsory schooling (the path known as "discontinuous education"). The majority of pupils oriented towards the gymnasium come from the more demanding sections of secondary I and, over the country as a whole, we find ourselves, depending on the canton, facing a complex system of the type summed up in Figure 3.

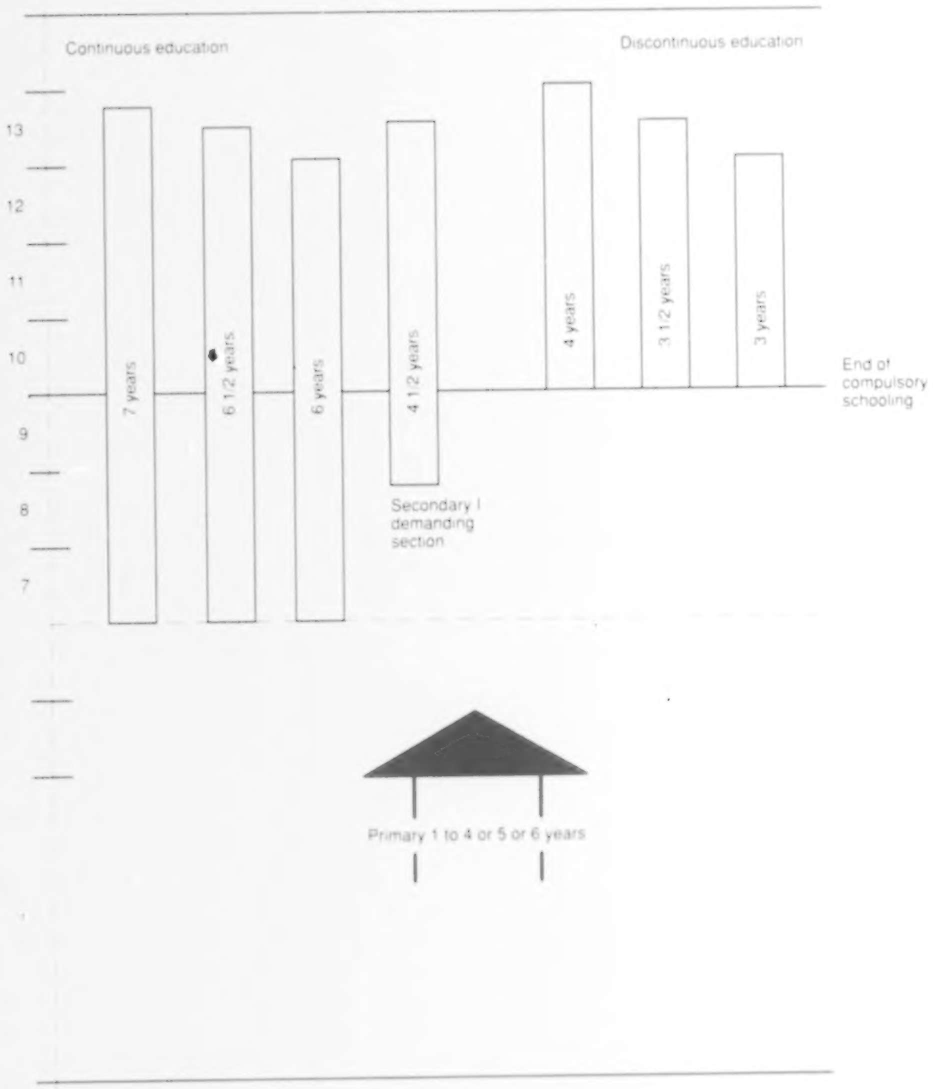
At present, most gymnasiums offer five types of education recognised at federal level by the federal regulations on the recognition of the certificates (ORM):

- Type A: Classics (Latin, Greek, Hebrew);
- Type B: Modern languages and Latin;
- Type C: Mathematics and natural sciences;
- Type D: Modern languages;
- Type E: Economics and social science.

Although enrolments remain rather low as compared with what happens in other OECD countries, the gymnasiums are taking increasing numbers of pupils into first year. According to the information we were able to obtain in the cantons visited, it seems that there is a high level of repeats or dropping out in the first two years. In the canton of Valais, for example, 15 per cent of the first year gymnasium (also known as "college") pupils drop out and do an apprenticeship. This is despite the fact that co-operation between teachers in the secondary I orientation cycle and those in the first years of college is tending to increase as a result of the considerable innovation going on in secondary I. In the canton of Ticino, where the *scuola media* also puts more emphasis on orientation than on selection, 22 per cent of the pupils admitted to the *lycée* fail at the end of the first year and 15 per cent at the end of the second year. It seems that in other cantons selection is even more important. All these selection mechanisms are connected with both the pedagogical attitudes of the *lycée* teachers and the demands of the regulations (ORM), a subject to which we shall return.

To conclude our discussion of the orientation of pupils at the end of compulsory schooling and in post-compulsory schooling, we must say a few words about the methods of access to the "other schools". Some training, such as that of primary teachers without the *maturité*, kinder-

Figure 3. **Structure and duration of gymnasium studies**



garten teachers and certain health occupations take pupils straight from compulsory schooling, but also those pupils who have dropped out of the gymnasium or even, more rarely, those who gave up their apprenticeship. This, incidentally, is a good indication of the stabilising influence of the apprenticeship system. It should also be noted that some gymnasium sections, such as economics and social science, are very close to certain schools of commerce, such as the one we visited in the canton of Neuchâtel where the E and D sections are former schools of commerce. We have already pointed out the importance of the ESCEA as the prolongation of the schools of commerce but also without any doubt as the final stage for gymnasium pupils who have dropped out and for holders of the *capacité* certificate in commerce and administration. We would also add, and we shall return to this point, that *maturité* holders can enter the higher technical schools or technician or management training after a short period of work experience.

Finally, we would stress the importance of these types of training that do not depend on the or paths and thus give greater flexibility to the highly structured Swiss education system. Hence the urgent need for a better knowledge of their purpose, their functioning, the "markets" they supply and their future, both quantitative and qualitative, in view of the apparently growing demand for full-time education and the real rigidity of the gymnasium curricula.

Entry to the labour market

A last question, not discussed in the Background Report, should be touched on here. This is – still from the standpoint of the study of educational paths – the insertion of young people into the labour market. It is surprising that knowledge of the Swiss education system in terms of finishing diplomas is not supplemented by surveys of the paths taken by young people in the first few years at work. In many OECD countries such surveys are made in order to get a better understanding of the causes of unemployment among recent school-leavers. This is obviously not applicable in Switzerland, where there is virtually no youth unemployment, but it would still no doubt be interesting to get an idea of what new types of education, such as the diploma schools, mean to enterprises. It would also be very interesting to know what happens in a period of over-supply to teachers who do not find a job or who leave one for reasons of family mobility. Finally, we got the impression that neither the OFIAMT nor the trade associations really knew what happened to apprentices once they obtained their *capacité* certificate. At least one thing is fairly well known: many apprentices leave the employer who trained them. This phenomenon, which may not be at all unusual, suggests that what we could be seeing here is an emerging labour market of young apprentices which is vital if they are to acquire a broad range of skills. We were told, however, that some of these qualified apprentices subsequently return to the firm in which they had served their apprenticeship.

Thus it seems to us that Switzerland lacks a proper statistical coverage to give a picture of pupil mobility and the principles behind this mobility. For the moment, it is as if those responsible for the education system thought that it functioned like a system of steady flows in which there was no imbalance between the wishes of the people in it and the places available. As we have already said, we think that the notion of supply and demand in education is very complex and much light could be shed on it at least through intercantonal comparisons. Two points need to be elucidated:

- The social, educational and economic contexts in which a shortage of apprentices develops;
- The social, educational and economic contexts in which there is an undeniable pressure in favour of long gymnasium studies.

Notes and References

1. Except where the gymnasium begins immediately after primary.
2. The two figures of 6 500 pupils in EDDs and 12 400 *maturité* certificates are obviously not directly comparable, but they do indicate an order of magnitude.
3. Even if the teachers of general subjects in the vocational schools are as a rule former compulsory schooling teachers.

Chapter 5

INNOVATIONS

The "strategic" importance of secondary education in the development of the system of education and training as a whole has prompted us to analyse more particularly the changes that have been made and those that are currently being implemented or are planned at this level. Nonetheless, the examiners would draw attention to the fact that it is at the primary level that the most sweeping innovations had been made, even though these may not necessarily have affected the structures. An enormous effort has been made to reform curricula, e.g. modern mathematics, mother tongue, starting a foreign language at an early stage, environment (history, geography, science), etc.

Innovations in secondary education

Although most Swiss have a conservative attitude towards new and untried ideas, a substantial number of innovations have helped to change the education scene in Switzerland, particularly since the 1970s. The general tendency has been a raising of the ceilings in all sectors. Education at the primary and lower secondary levels has now been linked to form the period of compulsory education.

The fact that schooling between the ages of 12 or 13 to 16 is considered as a *cycle d'orientation* can be of vital importance. The structure of secondary I education has traditionally mirrored that of secondary II and serves as a preparation for this to the extent indicated earlier. However, as is the tradition in Switzerland, if a child is not capable of going on to a higher level, he very often has the possibility of rounding off the previous level with an extra year of study, or he can choose a stream that is more suited to his ability. This provides some degree of flexibility but the overall framework is still clearly that of a selective form of education which at all of its levels reflects the stratified structure of society. By contrast, the Valais-style *cycle d'orientation*, for example, is substantially more flexible: a child can enrol either in a virtually conventional type of school with sections, or in one with different levels and options; in the latter he can move ahead in certain subjects (languages, mathematics) at different speeds, that is to say by advancing to different levels, and make up the rest of his programme with optional subjects.

Turning from this general framework to more particular aspects of the system, what we find in the same basic type of education is a range of schools with different programmes lasting two, three or four years leading to apprenticeship training or to schools of a more advanced level with a system of branching which may differ from place to place, but which fulfils the aim of developing children's aptitudes without putting pressure on them and by drawing out the potential of each of them in strict accordance with the labour market and occupational skill requirements. What cannot be overemphasized is the fact that, for the Swiss, once they have completed their compulsory schooling, further education very rarely means a gymnasium.

This is borne out by the fact that at the end of secondary I education only 25 per cent of children (about 72 000) go on to the purely academic streams of secondary II, while about 75 per cent (208 000 including 30 000 foreigners) opt for apprenticeship training or, in the case of 30 000 of them, for full-time vocational schools. The system provides what is asked of it and apprenticeship training adjusts flexibly to changes in the economic environment, while clearly providing some cultural adjuncts but without showing any signs of a move towards formal education. The Swiss consider that the absence of unemployment in their country is partly due to this system; each individual finds his "ecological niche" at a very early stage without harbouring unrealistic aspirations. In addition, there are places available for foreigners. The decline in the birth rate has led to a drop in the number of male students, although this has been virtually offset by the rise in the number of female students.

On the other hand, gymnasiums or the schools preparing for the *maturité* are going through a period of transition. The ORM (*Ordonnance sur la reconnaissance des certificats de maturité*) is one of the few areas for which the Confederation is responsible and provides evidence of a move towards intercantonal harmonization. Recently, however, there have been changes. Now there are five different types of gymnasium: those offering *maturités* A (classics) and B (Latin and modern languages) and C (mathematics and science) are the most selective and geared to the continuation of studies at university level; Type A is gradually disappearing but Type B is still fairly common; Type C was recognised as equivalent to Types A and B as early as 1968; Type D (modern languages) gained similar recognition in 1972. Type E (economics) was the last to be recognised, thus setting it apart from the very many schools of commerce of a lower level. However, there are other gymnasiums which are not yet recognised at federal level; in Aargau, alongside other schools, there is also an SP (socio-pedagogics) gymnasium, in the magnificent Abbey of Wettingen, teaching modern languages, pedagogics and music in what was formerly a school for girls.

There has been a growing tendency for gymnasiums to accept students from different educational streams and a number of them now enrol children who did not start their education in the gymnasium stream but switch over to it from another secondary I school. This is known as the "discontinuous" educational path and marks the abandonment of the "exclusive" single track structure and a resolve to create bridges within what had hitherto been a rigid system. This intention was spelled out in the 1972 MIMO report (*Mittelschule von morgen*, i.e. secondary education of tomorrow), but the CDIP was forced to repeat its recommendations in 1976, 1980 and 1982. Now an attempt is being made to push this reform from within, and a proposal for core curricula to harmonize gymnasium studies throughout the country is due to be tabled.

The gymnasium as the context for monitored innovations

Many attempts have been made to reform gymnasium education since the mid-1960s. For example, the CDIP at that time set up a commission to study ways of reforming secondary education. A report was published in 1972 which made the following recommendations:

- creation of an orientation stage at secondary I level;
- gymnasium education to start at the end of compulsory schooling (as we have said, this is not the case in every canton);
- the splitting of the last four years of gymnasium into two two-year cycles with a wider range of options;
- a redefinition of teaching methods, schoolwork and examinations.

In referring to the findings of this commission, the Background Report comments that the publication of the CDIP work was greeted with a marked lack of enthusiasm. Most gymnasium heads and teachers thought that the reform went too far. What in fact was most conspicuous by its absence was the will to reach a consensus and to get something done. Instead of a "thorough overhaul of secondary education", only piecemeal and superficial changes were made and the proposed reorganisation of the *maturité* remained a dead letter.

In 1979 the CDIP reactivated this project and its Commission on Secondary Education recommended in particular reducing the number of different types of *maturité* and the range of examination subjects. Once again, these modest proposals for reform were voted down by the Conference of Gymnasium Heads which was radically opposed to reform on a national scale. The examiners were particularly surprised by the persistent ability, over several decades, of a number of pressure groups including gymnasium heads to block any reform proposals while economic, sociological and pedagogical conditions around this institution were changing — and would continue to change. Since 1982 the proposals for reform have been recast along different lines and currently over 100 teachers are working on a proposal for a core curriculum which it was intended should be put into effect between 1988 and 1991.

Does this mean that gymnasium courses constitute a barrier which, as one teacher maintained, affects the operation of the entire education system and compulsory education in particular? It would seem that the situation is not quite so serious as this and that, in fact, reforms are being introduced on a local basis and are beginning to have an effect. First of all, it seems now generally accepted that there is an irreversible tendency to begin gymnasium studies at the end of compulsory education and therefore, in the fullness of time, to institute throughout the country *cycles d'orientation* in secondary I. In addition — and still within the same context — it was noted that in Ticino the four years of gymnasium education are split into two two-year cycles, where the first of these can serve as an extended *cycle d'orientation*.

In the gymnasiums we visited we also raised the question of the development of a genuine interdisciplinarity (e.g. the linking of chemistry, physics and biology) and the response we got was not completely negative although it was pointed out that moves of this kind tended not to be very long-lasting. Moreover, as we know, there are now five *maturité* streams and the more recent of these (modern languages and economics) resemble in some respects the curricula of the commercial schools whose aim is not to prepare students for the *maturité* but for the CFC. The growing range of accredited courses has resulted in an increased enrolment of girls in gymnasiums and in a good number of these there are now as many girls as boys. It is therefore understandable that the numbers of students at the *maturité* or university levels have risen very sharply in recent years, as can be seen from Table 15.

Table 15. **Increase in enrolments at various levels**

	1976	1985	Increase in %
Maturité certificates	8 800	12 600	+ 43
First-year students	11 500	14 000	+ 22
Students	54 200	74 800	+ 38
First degrees and diplomas	4 000	6 300	+ 58
Doctorates	1 600	1 900	+ 19

The dual system and its potential for innovation

The operation of the dual system with its three pillars — vocational courses, introductory courses and enterprise-based training — has already been described at length. These introductory courses, which have been one of the major innovations in recent years, have changed the system from a dual to a "triple" system, thus differentiating it somewhat from that which exists in Germany and Austria. There has also been a strengthening of certain programmes to keep pace with technological developments and remedial classes for students who have not properly assimilated the requisite basic knowledge for their apprenticeship courses. It was pointed out how much importance both Swiss firms and the Swiss people in general attach to this system, although this does not however rule out the possibility of either general reforms or the wider application of successful small-scale experiments. This shows that the apprenticeship system is both very solid and very flexible, and is capable of introducing new fields of training for its students.

Mention was already made of the number of trades taught (between 200 and 300), which is generally recognised as being too high, and of the fact that this conflicts with the need for multiple skills in the modern-day working environment. Yet, some of the vocational schools we visited had introduced a system of common core instruction in vocational subjects that was followed after two years by more specialised options. It is obvious, however, that the existence of these common cores does not fit in well with a system of apprenticeship within one particular firm and that what is therefore required is that apprenticeships should be served in several firms under different apprentice masters even though one of these might act as master-in-chief. It should however be said that the principle of having only one firm provide the training is still considered as being of prime importance as regards the stability and continuity of the apprenticeship. Such collaborative arrangements can sometimes extend beyond this and involve firms that do not take on apprentices as well as those that do; for example, in the Canton of Geneva there is a joint organisation to which all employers — trainers and non-trainers alike — contribute. In some regions we are also beginning to see examples of co-operation where apprenticeships are organised in the less common crafts where training is essential. Inter-firm or intercantonal schemes call for more sophisticated methods than the traditional ones of managing the apprenticeship system. They also call for co-operation between trade associations and no doubt between the vocational schools. In our view, such co-operation is essential to the development of a flexible and efficient apprenticeship system. It was difficult for us to gauge the extent of such co-operation, but it would be of the utmost importance for OFIAMT and the cantons to make a systematic inventory of such schemes with a view to assessing these in relation to the underlying principles on which the success of the apprenticeship system within the community is based.

However, OFIAMT is expecting greater success with "block" courses in the case of the minority of apprentices attending higher vocational schools, an optional additional stage the aim of which is to develop vocational aptitudes and broaden the personality, and also to facilitate access to more advanced types of training. But it would seem that some setbacks have been encountered, the reasons for which are not entirely clear at the moment. The dual system's efficiency is due primarily to its flexibility and this flexibility could perhaps be used in some cases "to move ahead a little further".

In the vocational schools, full-time teachers are apparently in a minority and they are assisted by part-time staff who are qualified engineers still working in business and industry. The question that we ourselves and others raised was to what extent this mix of vocational teaching staff is a good thing for the students or whether it causes problems of co-ordination. Here again, the fact this system is a highly decentralised one (OFIAMT decides how vocational training should be organised and the cantons put this into practice) means that it is not always possible to get an overall picture of the way vocational schools are organised and operate.

The obvious concern that the Swiss show for their apprentices does not mean that their contribution to firms and to the productive system as a whole cannot be further improved. For example, it is laid down that the number of hours worked by apprentices should not exceed that worked by employees in the firm in which they are serving their apprenticeship. Admittedly, apprentices are supposed to be given training during this period, but, given the increased complexity and/or extent of the knowledge they need to acquire, ought not this number of hours to be considered a maximum rather than the norm? Is there not sometimes the danger of overloading the aggregate work schedule for apprentices, even though the time spent in school is considered and paid as work time? Are the authorities able to control compliance with the regulation regarding the permitted maximum number of hours? These are important questions regarding those aspects of the regulations governing apprenticeships in Switzerland which could be improved. From the information we were able to gather, it appears that in only 25 per cent of cases are apprentices' wages and working conditions based on a collective agreement. In this regard, the federal authorities point out that apprenticeship has the legal status of an individual contract of employment , governed by private law; nonetheless, since it is subject to certain overriding provisions of the public law, employers and unions do not enjoy complete freedom in this connection when negotiating collective agreements. Wherever the conditions of apprenticeship are included in such agreements, strictly speaking they only constitute recommendations to the member firms employing apprentices.

While the authorities acting in accordance with the public law are responsible for enforcing compliance with the regulation governing apprentices' working hours, the same is not true as regards their wages which are freely negotiated by the parties concerned — employer and apprentice (or the parents) — and therefore subject to market forces. It goes without saying that, in the context of the current dearth of apprentices, employers are proving far more generous in this respect than in the past. What the information we were able to gather indicated was that firms, particularly industrial firms, are finding it difficult to recruit apprentices.

One other aspect we considered was the possible relationship between the dual system and the marked move towards a tertiarisation of the economy. The first thing to be said is that service sector occupations in many cases call for general rather than vocational training in the industrial sense of the term. In view of the fact that the category of employees in business and commerce is the largest of all, the question that arises is how and in what form basic subjects are taught in this area. What specialised or general training has been given to the teachers who provide most of the instruction to these students? In the industrial sector, what gives the apprenticeship system its strength and "social force" is the involvement of major firms. What seems to happen in the service sector is that major employers (like the chemical industry in Basle, the metal industry, banks) and public sector undertakings recruit students who are not necessarily intending to undertake an apprenticeship (students from the gymnasiums for example) and give them an "in-house" training which only very remotely qualifies this as part of the dual system that we have been describing. It is, however, interesting to note that the training provided in this very specific manner by these firms leads to the award of a certificate of proficiency which is recognised throughout the entire country. It is clear therefore that, while the Swiss apprenticeship system may be highly unified in terms of the federal regulatory structure governing it, it is in fact sharply split between those students who are lucky enough to be taken on by one of the leading firms and those who have to go into the small and medium-sized firms.

The non-university system

Table 16, based on information contained in the Background Report, gives the main figures on higher vocational schools in 1986/87. As can be seen, these schools have been expanding at a rapid pace since the early 1980s. The real question, however, is whether they can provide, alongside the universities and institutes of higher education, a pole of attraction for students, a supply of qualified staff for business and industry, and a breeding ground for managers and engineers for society as a whole.

This process would already seem to be well under way in the case of the ETS engineering schools which turn out engineers, architects, chemists and members of other skilled professions. The courses are recognised by the Confederation which in addition, together with the cantons, gives grants to these schools. There are a total of 15 full-time ETS engineering schools and 10 part-time or evening schools whose students are in paid part-time employment. Full-time schools usually serve one or more cantons. Part-time schools are more directly linked with the corporate sector and are often under the aegis of trade and professional associations which, as stated earlier, cover the entire country.

These schools award several hundred diplomas every year and more than the combined total for the federal polytechnics at Zurich and Lausanne in similar fields of study.

There is a body responsible for ensuring co-ordination and co-operation between these engineering schools: the Conference of School Heads. In addition, there is a Federal Commission which reviews requests for accreditation from schools and monitors compliance with the minimum standards laid down by the Confederation. We made contact with an ETS school in the canton of Valais. This school is run by graduate engineers from the Zurich Polytechnic and provides courses in chemistry, electrical engineering, mechanical engineering and agro-food production. The programme lasts six semesters and comprises 5 000 hours of instruction of which 12 per cent devoted to the teaching of languages, 7 per cent to management studies, 25 per cent to basic education and the remainder to the speciality concerned. Students are also required to

Table 16. **Enrolments in higher vocational schools, 1986/87**

Type of education	Number of students Total	*of which:* Women %	Foreigners %	In part-time education %	Increase: Over previous year %	Over 1977/78 %
Engineering schools ETS	9323	3.2	9.9	23.1	3.7	28.2
Schools of higher education for business and administration ESCEA	1284	10.7	2.1	11.5	3.9	66.5
Higher domestic science schools ESEF	154	98.7	0.7	..	8.5	..
Higher applied arts schools ESAA	..	..	..	..	..	..
Schools for social workers and specialised teachers CSESS/CSEES	2077	62.1	5.8	55.7	26.0	63.8
Total	12838	14.6	8.4	26.9	6.9	37.9

undertake a project in conjunction with a firm. The instruction is of a highly practical nature: the mathematics taught are applied mathematics and language instruction concentrates on expression, oral and written communication and report writing. This school's ambition is to provide a multidisciplinary education and it is progressively setting up laboratories, so that it can do contract work for firms and establish links between industry and research, which is of the utmost importance for the economic future of Switzerland.

It is important to realise that these schools are in contact primarily with small and medium-sized enterprises for whom they make the ideal partners in the field of industrial applied research. However, it would appear that not every ETS school fully recognises the potential in this area. Too many schools have so far focused on the training of production engineers and are not making sufficient provision for the expansion of the research function within firms, including the medium-sized ones.

It is likely that this key issue will be raised at the Conference of ETS Engineering School Heads which is responsible for co-ordination and co-operation between the schools concerned. In addition, as mentioned earlier, there is a Federal Commission which is responsible for reviewing requests for accreditation from schools and monitoring compliance with the required standards. The Order regarding minimum requirements for accreditation was issued by the Federal Department of the Economy which entrusted responsibility for its application to a Federal Commission. This Commission, administered by OFIAMT, is made up of representatives of the cantonal authorities, the world of business and industry (employers and employees), university circles, and heads, teachers and graduates of the ETS themselves. Its members, in their capacity as experts, are allowed a certain amount of discretion in evaluating schools. It is their task to inspect the standard of teaching and examinations in the newly created schools and, where appropriate, to recommend their accreditation. As regards the already established schools, these are subject to periodic review. The Commission acts as an advisory body for the authorities in the area of non-university engineering training. (A similar procedure has been set up for the ESCEA and other higher educational institutions.) We often heard it said that the popularity of engineering as a subject had declined during the 1970s but that there had been a revival of interest in recent years as in all of the industrialised countries. We noted that many cantons (Valais, Ticino, etc.) were planning in the near or not-too-distant future to set up ETS schools and, more generally speaking, non-university schools of higher education. These schools, and particularly the ETS schools, conduct research and in 1988 some 500 ETS engineers undertook post-graduate studies principally in the field of electronics, management studies and energy technologies. It seems vital to establish to what extent the Swiss federal system is capable of generating — as it alone can do — an effectively co-ordinated development policy for these higher education institutions and provide them with a unity of purpose in response to the needs of business and industry. This would produce a high-level array of non-university institutions which would be able to match the university structures and provide opportunities for educational advancement to the best among those, i.e. the vast majority of students, who have not chosen the *maturité* stream.

Chapter 6

TEACHING STAFF AND RESEARCH AND DEVELOPMENT

Although Switzerland had, and still has, the same problems over the recruitment, training and the use of teaching staff and their links with educational research as other industrial countries, owing to the peculiar local and national situation, the country is not faced with the same acute problems as some OECD countries. Swiss cantons have for a long time made a great effort to give their teaching staff a socio-economic status (particularly in relation to salaries), of which other countries are envious. Some categories of teachers, such as those in gymnasiums, have traditionally had the benefit of considerable independent professional status and through their representative organisation(s) the right to discussion, e.g. in relation to advanced training, and participation, particularly in preparing study programmes. However, all problems are far from being resolved; some relate to the specific methods of administering the teaching systems in Switzerland, others are those of almost all industrial countries. Since most visits and interviews of the examiners were in French-speaking Switzerland, the main examples quoted later concern developments which relate principally to this region. Perhaps the general ideas obtained can apply to the whole Confederation.

Developing integrated statistics relating to teachers

Foreign observers are immediately struck by the absence at national level of a relatively standard basis for information on teaching staff in the broadest sense of the word, i.e. with equal emphasis on the number and characteristics of heads of institutions, teaching advisers, trainers, teachers partially or wholly seconded for educational research, etc. The exact number of teachers in Switzerland is not known. The fact that the cantons themselves have traditionally been responsible for administering the education system may explain the situation, which may be encountered in other federal countries under more or less similar circumstances. In Switzerland, however, contrary to the situation in the majority of these countries, there are greater obstacles to the mobility of teachers due, for example, to the lack of mutual recognition of teaching diplomas awarded by individual cantons and peculiar conditions for the recruitment, appointment and management of teaching staff.

As in many other European countries, socio-demographic changes are taking place in the regions; because of regional variations these changes may result in the development of different canton education systems, especially in respect of teaching staff requirements. In addition, although each canton has its own teacher training college (one of the traditional signs of their independence on matters of education), as a result of the slow reaction of these institutions — and of those responsible for training other categories of teachers — to sudden increases in demand, it may be necessary to export or import teachers between cantons or even large regions in order to satisfy the demand. It should be remembered at this point that not all cantons have a university to train their secondary teachers, or even an institution to train some categories of first cycle secondary teachers, or for vocational training. The employment characteristics of the profession, especially the female members, e.g. leaving the profession permanently or temporarily, the geographic mobility of married couples, professional mobility, the age pyramid, etc., can be such that supply and demand must be forecast and in many cases teachers have to move to other cantons to satisfy demand. Finally, the content of some jobs which have traditionally been given to members of the teaching staff with or without specific training, but increasingly with, will have to be extended in the future. For example, building up management teams, developing on-the-job training, and research and development to be carried out by teachers. In many of these cases it will only be possible to train these specialists at inter-canton level, or in the most sensitive cases at national level. For these reasons, unless the way is to be opened for more extensive exchanges within Europe, it appears necessary to know the exact number of Swiss teachers and their characteristics. Regular assessment of the number and flow of teachers would enable the supply to be compared with the potential demand based on changes in the number of students (in stable academic structures or changing structures).

It is interesting to note that statistics relating to teachers were published from 1870 until the 1950s, albeit with the shortcomings that were characteristic of that period. It has not been possible to continue this work since, again in 1981, the CDIP and other bodies rejected an ambitious proposal for compiling teacher statistics from the Federal Statistical Office *(Office fédéral de la statistique),* in spite of the fact that in 1982 the cantons were almost unanimous in indicating in a survey by the Federal Statistics Committee that teacher statistics were needed.

Almost half the cantons still do not have any detailed information on the status and mobility of teachers. In addition, since it is not always possible to compare the figures for cantons or for years, the first major survey in the country organised by the Swiss Centre for Teaching and Educational Documentation *(Centre suisse de documentation en matière d'enseignement et d'éducation,* CESDOC) was carried out by a questionnaire to be completed by the cantons. The first survey, covering the 1984/85 academic year, was repeated for 1987/88, with an intermediate survey of the changes from 1984/85 to 1986/87. Unfortunately, this survey was limited to teachers in the compulsory system. Another *ad hoc* survey suggested first by the Swiss Association for Secondary School Teachers *(Société suisse des professeurs de l'enseignement secondaire,* SSPES) and supervised by CDIP and the gymnasium Headmasters' Conference related to "Projections of the number of lessons to be given in schools preparing for the *maturité* and diploma schools. This survey, which gave the first indirect indication of future requirements (in stable structures) for this category of teachers, was also organised by CESDOC. Here again, it is regrettable that there are no statistics on the actual number of lessons and teachers and that, in view of their fundamental role mentioned earlier, teacher training colleges have not been included in the survey.

There now appears to be some unanimity over introducing statistics on teachers in Switzerland. The Federal Office of Statistics (OFS) has been commissioned for the purpose, but statistics will not be available for some years. The examiners trust that there will be no more obstacles — including the specialist staff required — to delay implementation of this project. From experience, we would like the information on teachers to relate exactly to that on pupils and expenditure and for the numbers and flow to be given, and we would like the information, which should be as specific as possible, to be such as to enable exact pupil/teacher ratios to be calculated from the actual numbers of staff working full-time and part-time. As indicated above, it would also be important to obtain information on other staff involved in education, the majority of whom come from teaching staff. The potential mobility of teachers and any need to reintegrate teachers on a full- or part-time basis, especially women teachers on fairly long leave, and to offer them refresher courses are reasons for obtaining information as detailed as possible on levels of training and experience of those involved. Although this indicates the importance of teachers' associations in Switzerland, it is astonishing that one of the only comparative studies on the teaching load, duration of lessons and salaries was published by a Teachers' Union. In addition, in order to obtain a clear view of the problems of surplus or shortage of teachers at this level, reference must be made to a contribution made by the Swiss Secondary Education Teachers Association (SSPES) in the document on "The number of lessons to be given in schools preparing for the *maturité* and diploma schools.

On the whole, the work accomplished in a very difficult political and administrative context by the CESDOC "Statistics and Projections department" as a result of the confidence it enjoys in the cantons should be welcomed for its true value. As will be mentioned in the section on Research and Development, it is naturally regrettable that CESDOC's brief did not actually permit it to carry out analyses and make forecasts in the documents it publishes, especially on training and teacher recruitment and employment conditions which would enable the courses of action of any active policy to be clarified at national level.

If the system for the collection and processing of OFS information for guidance rather than statistical purposes could not be brought into operation quickly, the authorities concerned should examine the possibility of implementing intermediate surveys based on programmes for the specific processing of current information of an administrative nature existing at canton and/or local authority level. This could be accomplished from lists which may exist either in administrative offices, public education or public finance departments. Some countries did prepare their first teacher statistics on these bases. In any case, some cantons are already making great efforts to become better acquainted with the characteristics of their teaching staff. It is Zurich that has the most comprehensive statistical data and the Neuchatel Statistics Office, for example, has already computerised the information on apprentice masters. By making use of this, it would certainly be possible to obtain the first basis for information quickly, provided that the necessary personnel and funds were obtained.

Supply and demand trends

Since there was no firm basis for information on teachers, the examiners have only been able to obtain little more than an impression of the situation. Some of the information collected has been corroborated by that in Bulletins No. 88 (1988) and No. 89 (1989) published by the CESDOC (Swiss Centre for Teaching and Educational Documentation) and compiled in co-operation with the CSCRE.

At primary education level

In the case of primary education, it is anticipated that in the 1990s there will be a return to a situation which may lead to difficulty in recruiting, and even shortages in some cantons (St-Gallen, Thurgau, Zurich, Lucerne, Fribourg, Solothurn and to a lesser extent Basle). The authorities concerned should ensure that it is not only the customary concertina effect of the supply policy of the authorities and training institutions in view of a change in demand, or that the teaching profession has become less attractive. If this assumption were to be maintained, in view of the level of salaries generally considered satisfactory, questions would even have to be asked about the profession of primary school teacher. It has been pointed out to us on several occasions in both French-speaking Switzerland and Ticino that primary school teachers increasingly considered that they had hardly any authority in the class. This may be explained by the way in which the new study programmes are designed, especially the new curricula and resources consequently used. This restriction is considered less significant at secondary school level. It should therefore be determined whether or not we are faced with a situation already well known in other countries: a different type of professionalism being expected from teachers for the different levels and types of education. If there is too much difference in this respect and in training, it will have the disadvantage of reducing both the potential horizontal or vertical mobility of teachers and the long-term attraction of a level or type of teaching. It has already been pointed out to us that in Ticino there are difficulties in the vertical mobility of primary school teachers (for example, there were 120 candidates for 25 places for a training course in remedial education) and overall very few replacements for the profession. In order to cope with this situation quickly, in addition to specific measures expected (use of first cycle secondary teachers after retraining courses, introduction of part-time teaching including "duo" teaching, special recruitment campaigns, etc.), some cantons want to recruit in other cantons since, in spite of there being no mutual recognition of teaching diplomas at Confederation level, this method is employed when other sources of recruitment have been exhausted. It has been found that in this situation, the origin of a diploma no longer has the same importance as during a period of stability. There are already some regional agreements for the mutual recognition of diplomas (e.g. in Central Switzerland) as well as bilateral agreements. There are however also examples of unilateral recognition: the canton of Neuchatel recognises the Vaud diploma but this is not reciprocated. However, as will be shown later, in the absence of recognition of teaching diplomas, external recruitment should not lead to a teacher accepting the status of assistant with lower pay than normally offered by the canton. However unwilling Swiss teachers may be to move, it is not certain whether, in view of the demand for qualified labour in other activity sectors, this source of recruitment will certainly dry up in the long run because of a lack of general agreement between cantons, which is the main obstacle to mobility.

In short, it would be important to have more detailed information, gathered by means of special surveys, on how future primary teachers (both male and female) decide on their career. This information should cover such aspects as their socio-economic category, their motivation and the impact of the training they have received in the light of the changing values affecting Swiss society as well as that of other European countries.

At secondary education level

The situation varies more in the case of secondary education. Some cantons, e.g. Lucerne and Basle-District, have indicated that there are some difficulties in recruitment in certain of the traditional streams at first cycle level, while in the second cycle secondary, in view of the demographic effect, there are both sectoral surplus and shortage, as is also the case in many other OECD countries. Thus, in the case of vocational schools we have been informed that owing to some difficulties of recruitment in the large towns (in the French-speaking region) there has been a delay in sending teachers already appointed for training. Moreover, current tension on the labour market, especially in relation to high level qualification, sometimes makes it more difficult to second the staff concerned, such as apprentice supervisors, to companies. The CESDOC survey into the number of lessons to be provided in the second general cycle has indicated that forecasts show that the trough will be reached in 1995 and the number of lessons to be provided will increase again in 1996 as a result of the increase in the birth rate observed at the beginning of the 1980s. Since these effects will vary according to subjects and cantons, it might seem desirable for the cantons to co-operate and together investigate measures needed to reduce the consequences of this change, i.e. the ageing of the teaching staff concerned, exhaustion of the supply followed by renewal of recruitment with the risk of shortage associated with the concertina effects.

Mobility and status

Where there are difficulties in recruiting, it may of course be necessary in order to adjust teacher supply to demand, to look for other potential sources of qualified staff. The first obvious source is women. In the general introduction to the socio-demographic situation in Switzerland, it was seen that the female participation rate is lower than that in many other European countries. It was apparent in teaching from the percentage of women teachers which, in 1987/88, was lower than elsewhere in primary schools (57.2 per cent) and the first cycle secondary (28.9 per cent). There are of course considerable variations in cantons and their type of education. It appears that women teachers are wanted to provide flexibility so that the education system can adapt to requirements — in relation to the percentage of those not appointed, i.e. candidates for appointment, supply teachers, annual replacements, etc. In fact, out of 17 cantons for which this information was available, it was found that in primary education 20 per cent of women were not appointed compared to 7.4 per cent of men and that the respective percentages in the first cycle of secondary education were 50 and 16 per cent. In relation to the broader measures already referred to in the case of women working in Switzerland, there is certainly a potential extra source of recruitment of teachers which should not be neglected in the future. However, it might be questioned whether the relatively high percentage of "not appointed", i.e. 24 per cent in primary education and 22 per cent in the first cycle of secondary education, is possibly an indication of rigid regulations in terms of training, recruitment and probation which are prejudicial to a quicker rational adjustment to demand and mobility within and between cantons.

The duties of teachers in Switzerland, particularly in compulsory education, are subject to regulations which vary between cantons and are complex to say the least. For example, in Valais they are appointed by the communes but one-third of their salary comes from the commune and two-thirds from the canton. In Neuchâtel, appointment by a commune must be ratified by the canton. A teacher may therefore have a mixed status as both a canton and commune official. For tax purposes he may have to have a special authorisation to live outside the commune. In some cantons teachers are appointed for four to six years, with the consequent risk of being appraised using criteria of a non-professional nature. Insofar as he will normally have local status whatever it may be, an external candidate will often have to sit an examination to prove his suitability.

We were told of abnormal cases in which women teachers whose husband had been transferred had to attend training courses in order to obtain local qualifications or give up teaching.

The absolute administrative independence of cantons in this respect also results in considerable differences in salaries for teachers holding more or less equivalent diplomas. In secondary education, for example, there may be as much as 30 to 40 per cent difference between salaries paid in Neuchâtel and Basle. However, apart from the obstacles already mentioned and those of a purely linguistic nature, it is recognised that there is little advantage in adopting a more rational system for the majority of teachers. This is, of course, the consequence of federalism in this field, but the examiners wondered whether the existing practice would persist in the long term. If it is thought that measures favouring teacher mobility will have only a marginal effect while favouring adjustments to circumstances of a greater or lesser magnitude — as many in Switzerland would like — why decline to introduce a simpler and more flexible control at national level?

CDIP has been discussing the mutual recognition of teaching diplomas for twenty years. A document is currently being considered and it is anticipated that by 1996 the mobility of teachers could be improved. Can Swiss cantons do less than member countries of the European Community as regards the mutual recognition of higher education diplomas especially since some cantons do not hesitate to recruit foreign teachers to meet their own requirements and types of education? About 10 per cent of secondary teachers in Ticino are in fact foreigners. Higher education institutions in Switzerland are increasingly seeking co-operation with other European countries and traditionally these have recruited a number of foreign professors and research workers.

This first measure can only be achieved quickly through all-round trust. However, mutual recognition of teaching certificates is not everything. An agreement of this nature would still have to be completed by extra measures, i.e.:

- the harmonization of training;
- more equal appointment and employment conditions;
- equalising salary levels and social benefits.

There are two interesting examples in this respect. First, the canton of Outer Appenzell recently decided to increase teachers' salaries to bring them in line with those currently paid in eastern Switzerland. Second, on 9th March 1989 the Conference of the Heads of Department of Public Education of French-speaking Switzerland and Ticino approved a resolution under which if a teacher with an official title and an appointment in a canton has to move to another canton, he may have the title recognised in the canton to which he is going. Without wishing to make comparisons with neighbouring countries (including in a federal State) which have already resolved these difficult problems, the examiners believe that, other things being equal, the example of former West Germany should be considered by all the partners concerned in order to reach an acceptable solution as quickly as possible. Whatever the circumstances, the fierce debate on changes in the training of teachers which has been going on in Switzerland for many years would encourage mobility of the teaching staff there as well if these differences were reduced quickly.

Changes in teacher tasks and training

Examination of the Swiss education systems and of the problems they face leads us first to want to make a quick diagnosis of changes in the work of teachers. It appears that various institutions have examined the situation and recommended modifications in the role, duties and training of teachers on numerous occasions. The recommendations were generally similar to the major conclusions arrived at by the OECD at the end of the 1970s and during the 1980s. However, they do not appear always to have been systematically taken up and applied in schools and teacher training institutions. The following remarks are made in the light of our visits and perusal of documentary evidence.

Changes in duties. Generally speaking, innovations in the work of schools appear to respond to the problems caused both by the need for effective teaching procedures and apprenticeship and by schools' opening to their immediate environment. However, it is not always certain that teachers have benefited from suitable initial or in-service training.

As regards the effectiveness of class work, especially the action to be taken in the case of students "at risk" by providing support for them, it would be advisable to ensure that class teachers have learnt to co-operate with remedial teachers, whether the two teachers work separately or together, as now occurs in Geneva when pupils start to read. As for multicultural education, we have had confirmation of a situation, which is not particular to Switzerland, in which the expectations and outlook of teachers are still not in step with the tasks to be performed, especially given the arrival of immigrants from new countries. The teacher must avoid concentrating on some types of culture and learn to work both with his foreign colleagues seconded to Switzerland and with the variety of teaching resources available in specialised teaching centres, including those established under bilateral agreements. This raises, of course, the problem of identifying the trainers who are to prepare teachers for the new tasks.

As a result of the changes in the curriculum today, more emphasis is given to the student learning working methods that will enable him to carry out his own research and make use of knowledge and information. It might be wondered whether the continuing debate, especially in French-speaking Switzerland, on the extent of regulation of programmes and the choice of teaching methods does not reveal some difficulty both in accepting this change and leaving sufficient freedom to teachers to adapt teaching strategies to the specific needs of their classes within the curricular guidelines. It therefore comes back to what was stated earlier — the professionalism expected from the teacher, especially in primary education.

Professionalism must also be apparent therefore from detailed knowledge of both the students (results, attitudes, and interests) and the characteristics of each level and type of teaching. This is in fact the key to giving good guidance to pupils during their scholastic careers. We were shown on numerous occasions that, except possibly towards the end of compulsory schooling, teachers appeared little concerned about the guidance given to pupils, notwithstanding the recognised activities of the guidance counsellors. It is known that in certain cantons some of the basic choices for the future scholastic careers of pupils are made before the end of the compulsory cycle. In addition, students have received little counselling at the second cycle general level now that the intakes are less uniform than before.

This is illustrated by the fact that, in the teaching profession, there are considerable disparities in the training received and financing. While true professionalism implies regular contact between teachers of successive or parallel cycles to ensure the smooth transition or horizontal transfer of pupils, there are rigid dividing lines between types of education. Thus, we were informed in many places that there has not always been free dialogue between compulsory and vocational education. Even in vocational schools it appears that there is rarely any contact between the school teaching staff and the apprentice master who takes care of apprentices in companies. Reciprocal knowledge of the working plan of a company and the annual curriculum of a vocational school, or the joint signing of the term's report of an apprentice, cannot take the place of a follow-up of apprentices, especially when the latter have come from a different background.

With the gradual increase of parent involvement in schools, teachers will also have to become accustomed to dialogue with parents on other matters than the progress of their children. Even in respect of other members of the community they will be increasingly asked to make comments, especially where they will be relatively free to decide on the use of public resources.

Finally, in an education system where enterprise training is so important it is surprising that general training staff have very little knowledge of the economic and social world into which more than half their students will go after compulsory education.

The surprise is all the greater given that teachers have the benefit, which varies according to regions but is always appreciable, of assistance and advice on the functioning of the education system. Thus, in German-speaking Switzerland, a teacher representative may belong to the canton Education Committee or the local School Council or both. The dynamic nature of co-operation in French-speaking Switzerland over a long period is due to the active part the teaching staff have played and continue to play. The inter-canton committee in this region, which is responsible for following-up the CIRCE III experiment, has introduced an agreement on modern mathematics involving the last part of compulsory schooling education and the beginning of the second cycle of secondary education. An experiment has been carried out at Berne offering apprenticeships in industry to student teachers. One swallow does not make a summer. Teachers who accept these responsibilities take a view of the situation that an "ordinary" teacher cannot take, if the latter is not offered initiation and training in the various fields mentioned above.

However, a policy of more dynamic management of teaching staff means that teachers become more capable. There is no use training teachers for new duties if these are not clearly defined and introduced, and vice versa. In addition, since there is some difficulty in finding candidates for initial training, it will be principally in-service training which will be used to help teachers carry out these new tasks, which will include seeking solutions where there are none or the existing solutions are unsuitable.

Training problems. In Switzerland, as in any federal country, it is surprising to find such a variety of initial training regulations for the different categories of teacher. There are disadvantages but this variety has its advantages when it gives rise through various official or unofficial networks to experiments leading to useful results which could be employed by the various cantonal or supra-cantonal training institutions. Our first impression is that different types of training and experiments are found together, principally at compulsory schooling level (especially primary) but without any real exchange which would lead to the systematic design of new curricula. Nevertheless, since the beginning of the 1970s excellent reports on the future of training and tasks of teachers commissioned by the CDIP have been published. A good many authorities were inspired by one of the most extensive, *Lehrerbildung von morgen* (5 volumes, Klett, Stuttgart, 1975), to carry out a thorough reform of training courses. The examiners did not have the opportunity to analyse in detail the content of courses offered at the time. Their remarks will therefore be limited to general problems relating to the structure and management of training and to strategies which could usefully be introduced.

In-service training has been the subject of much thought and many experiments but, as in many other OECD countries, its development has been uneven, either because it is not properly integrated into the permanent duties of teachers in their establishments, or because the complexity of its organisation and possible cost make the authorities concerned unwilling to proceed. However, such training is remarkably well organised in some cantons like Zurich, Aargau, Berne, Basle and Geneva.

Initial training

In initial training there is again a contrasting situation in Switzerland. Contrary to almost all OECD countries, many Swiss cantons continue to train their primary school teachers at secondary school level, with the total length of this training sometimes being a year or two longer than studies for the *maturité*. It should be borne in mind, however, that some cantons (Geneva, Zurich) provide post-*maturité* teacher training at their universities. As far as is known, this training is not always strictly equivalent to the *maturité*, which may interfere with the final career of a holder of this teaching diploma. If it is considered desirable to attract candidates from various sections of secondary education to teacher training colleges, and from the vocational sections as is sometimes the custom in Ticino, in places where this is still not the case, students working for *maturité* or already holding a can if they wish prepare to become primary school teachers. Some years ago the OECD Centre for Educational Research and Innovation (CERI) expressed its agreement with the canton of Ticino in transferring the training of primary school teachers to higher education (non-university). We can recommend a similar change for cantons which, like

Valais, are currently considering the level and place for this type of training. In our view, it is difficult to ask a pupil of 16 or 17 to commit himself to training for a profession which requires not only considerable intellectual qualities but also specific social attitudes and qualities. Training at secondary level does not always provide an opportunity to make the best choice of profession. Training at a higher level enables students themselves to make a pre-selection during the first weeks of temporary registration (Neuchâtel, Ticino, Geneva, etc.) and teaching practice in a school environment. Some Swiss cantons are ahead of many European countries in this respect.

Although it is difficult to determine the duration of this initial training, especially after having compared some programmes and questioned some trainers, it appears that a third year of advanced training, where this still does not exist, could help improve the integration and staggering of the course programme without this year having to be spent entirely in a teacher trainer college. Insofar as many Swiss authorities have expressed interest in, and even recommended, a period of induction into the first job as one of the first stages in continuing professional training, it would seem that half the time of new teachers is spent on supplementary training closely associated with their first teaching experience. At present this period of professional initiation, such as in Ticino, could be compared more with a probationary period for checking ability rather than a necessary complement and extension of initial training.

At the other end of the chain is the problem of the total length of training of "general education teachers" (particularly for gymnasiums) for the upper secondary cycle. The report on the forecast of the number of lessons to be provided at this level states that a recent OFS survey of students who had completed their studies in 1985 and 1986 revealed the following: there is a tendency for the training period for gymnasium teachers to increase beyond a reasonable length, i.e. 20 semesters and more (including terms devoted to other studies undertaken before the final change of direction for half of the teachers). It was pointed out to us that in the case of languages where a period spent abroad is essential, it is not uncommon for a teacher with a diploma to begin his career at about 30 years of age. It would therefore appear necessary to carry out a thorough survey on the subject, questioning representatives of the profession, users and the different training institutions.

Especially in the case of secondary school teachers in cantons where there is no university, the question continues to be posed of either the absence or the lack of proper training before taking up a post. Ticino, a canton without a university, is discussing a draft law on the subject with a view to creating a teaching institution where a one-year course providing teaching practice and lectures on educational theory would give a teaching qualification. The idea would be, correctly, to provide training "*à la carte*" according to whatever studies were taken up in the "external" university. However, there is also the indirect problem of the length of studies; students reject the period of induction into their first job since they consider that it would be an extension of their probationary period. If this supplementary training was found to be necessary and relevant, it appears to us regrettable that it is not provided since, as has been found in other countries, it is doubtful whether a year's consecutive professional training after university is really sufficient to enable young teachers to become integrated into teaching after being away from the classroom for so long. We also consider that, in accordance with the Neuchâtel model, it would be appropriate to include in this training both a preliminary probationary period for the profession of secondary teacher in the same way as for the profession of primary school teacher, and direct participation of university teachers and research workers in educational theory and psychology courses, however unwilling students may be to prolong the period before commencing teaching.

Before leaving this question of the existence and importance of teacher training, the problem of the training of vocational teachers should be recalled. The fact that it is now compulsory for them to be trained in pedagogy must be considered real progress, especially as far as apprentice masters are concerned. Not everyone has yet received this training and there appears to be some lack of urgency in the crafts sector. In view of the great variation in students as far as training and origin are concerned, it is to be hoped that the cantons responsible for this training will ensure that students receive it. There are plans to provide teacher training of a longer duration than that required for apprentice masters, mainly for instructors coming from professional associations who are responsible for providing what are known as introduction courses, i.e. basic skills training. Should not this question be studied in relation to the wider problem of teaching relationships within the dual system?

But what can cause a problem in the organisation of the training of teachers for vocational education is the fact that in French-speaking Switzerland initial teacher training of vocational school teachers does not take place immediately after their appointment, contrary to the practice generally followed in the German-speaking part. They are therefore appointed for a year or two on a temporary basis then, if accepted, they undergo full-time training at the Swiss Institute for Vocational Education Teaching (ISPFP), in this case at the college at Lausanne. This means that the decision to confirm the appointment taken at the end of the probationary period cannot be based on the knowledge and practice of teaching methods considered the minimum necessary since training (during which the student is paid) is then compulsory. There seems to be a contradiction here with some self-selection procedures for final entry into the profession in other types of teacher training (primary and secondary). This situation may be explained by the fact that there is some tension on the employment market but insofar as when first appointed a teacher is only appointed on a provisional basis, uncertainty over his acceptance into the profession may last until he receives final approval. Consequently, there appears to be no real obstacle to immediate initial training, which in the case of the limited intake of some specialists could start as alternating training over a longer period, using advisers in pedagogy who currently supervise the second half of training during the probationary practical stages of taking responsibility.

The risk of an absence of dialogue and contact between teachers at different levels and types of teaching, which can have an adverse effect on the follow-up of students' school careers was recalled earlier. It has already been stressed that within vocational teaching there are no common training and meeting points for apprentice masters and vocational school teachers. Although they are generally products of compulsory education, teachers of general subjects at vocational schools no longer have the opportunity to be trained with their future colleagues from general secondary education, except possibly at a refresher course open to all. In general basic education in some cantons, there is still a difference in training for pre-school and primary men and women teachers. No attempt appears to have been made to train compulsory school teachers, at least in a common course, to assist in standardizing a type of teaching and thus avoiding disruptions for pupils when difficult transitions are taking place. Without going into details, the examiners estimate that the current advanced training policies, providing in-service training or voluntary personal training, still by no means compensate for this initial variation in training and that an experiment could be made with some common elements of training where trainers would be voluntarily trained and where teaching programmes and material would have been designed for the purpose.

Teacher trainers are one of the important basic elements of a policy for the reorganisation of teacher training, and therefore of schools. Here again, Switzerland is a land of contrast. Contrary to the situation in other countries, there is an absence of common training of trainers at primary education level, at least at regional level as in French-speaking Switzerland, but since 1975 teachers of methodology responsible for initial teacher training of future general secondary teachers have been receiving the same training. This two-year training cycle based on annual seminars is an excellent example of professionalism. It could of course be regretted that this initial teacher training is not formally integrated into the universities and that the cantons concerned wish to preserve their traditional independence by refusing to have it ratified by a diploma. At the most, it is ratified by a certificate, again showing that the drive and co-ordination in French-speaking Switzerland depends considerably on the initiative of its teaching staff. As far as we know, this training of trainers has still not been developed as systematically in other Swiss regions. They are recommended to follow this example. In the case of trainers of vocational school teachers, it is principally through collective self-training within ISPFP (Swiss Institute for Vocational Education Teaching) and on a personal basis that knowledge is updated. In addition, they have the right to a term's sabbatical after ten years employment — another possible way of training trainers for Swiss regions which has still not been introduced.

In our opinion, an important element still appears to be lacking in these experiments, especially if the Swiss Centre for the Advanced Training of Secondary Teachers (*Centre suisse pour le perfectionnement des professeurs de l'enseignement secondaire, CPS*) is included. This is more because of inadequate resources (manpower and time) than interest, the lack or even absence of research and development by these trainers. The shortage of manpower prevents both ISPFP and CPS from working on research and assessing the effect of training courses and of teaching material. At present training activities are only organised by the staff. It appears that trainers at teacher training colleges generally spend much less time on research and development than universities, while the latter are often less concerned with the specific problems of schools, teachers and their trainers. It appears that some of these institutions have been victims of earlier decisions to freeze jobs in public organisations. Now that the economic situation is much more favourable they should be given the resources required to fulfil their official duties.

Finally, we would like to emphasize the importance which must be given to the creation and integration of teams of teacher trainers, which should be as large as possible. These trainers cannot advocate working in teams if they do not show in practice that they are co-operating with all who can, and must, provide their expertise for the initial and in-service training of teachers. Although we were unable to judge the composition and co-ordination of these training teams, we were nevertheless given some interesting examples. At Ticino the final tests in teacher training college are prepared with inspectors who are themselves expected to decide on the futures of student teachers after their probationary year. Mutual training occurs as a result of this direct collaboration and relationships thus established between students. At Neuchâtel, inspectors take part in the training of third year primary school teachers and teaching advisers are considered to be full members of the team of trainers. A recent welcome development in this connection has been the submission of a report by a CDIP working group (the Fachdidaktik group). In spite of the difficulties encountered, to which reference will be made later, this question should be tackled overall by integrating the role of each in the principal stages of in-service vocational training, i.e. the period of initial training, induction in the first job and in-service training. The significance of this is, in particular, that we are in favour of a full participation of trainers in initial training and the following stages.

Advanced teacher training

In view of demographic changes and their effect on recruitment of new teachers, and the changes to be introduced into the curricula and their implementation at the different levels of the education system, advanced teacher training should be carried out rapidly and systematically. Thus it has been found that in Switzerland, as in other OECD countries:

- Although there is agreement in principle with the objectives of the different types of advanced training, there is still a long way to go before all human and material resources required to achieve them have been mobilised.

- In view of the small populations sometimes involved, the decentralisation required for this implementation makes the task of Swiss authorities particularly complicated. The various official bodies, including the highest, must be given credit for becoming aware of the problem. In 1988 CDIP decided to set up a working party, known as LEFOMO (*Lehrerfortbildung von morgen*), "to assess systematically the experiments in this field up to then and follow carefully the most encouraging reorganisation activities in some cantons and examine their effects". This study should therefore enable the framework for this advanced training to be redefined. As usual this project will be implemented in close co-operation with the teachers' associations and existing advanced training centres. For its part OFIAMT has just introduced 24-week "post-graduate" courses for vocational school teachers, which provide theory and practice, covering, first, the manufacture of machinery, building techniques, motor vehicle technology and, later, electronics, electrical engineering and the graphic arts. In addition to these advanced training activities, OFIAMT is offering 9-month sabbaticals. In recent years, in accordance with the spirit in which the education systems in Switzerland have been administered, the policy of advanced training has been more in the nature of a reaction than an initiative. Measures have been used increasingly to satisfy new requirements, such as the reorganisation of compulsory schooling curriculum, assuming responsibility for multigrade classes, multicultural education, the use of computers in education, and so on. In view of the teaching staff being brought back into the profession, thoughts very naturally turn to the rapid development of training activities for their reintegration into the profession in several cantons.

The difficulty of comprehending the enormous range of initiatives has led us to raise several key questions in relation to what has arisen from our various interviews.

It appears that the advanced training of teachers in Switzerland has the following characteristics:

1. Some cantons, e.g. Berne, St-Gallen, Vaud, Geneva, Basle, Zurich, Lucerne, etc., are more advanced than others in their initiatives and relative policy;
2. In some cantons advanced training has been made compulsory;
3. Where advanced training has been entrusted to primary teacher training colleges, as at Ticino, trainers are finding it difficult to carry out both duties;
4. Advanced training activities appear to take on the segmented structure of the education systems; there are few ordinary training activities with several types or levels of teaching;
5. At least in the case of the training programme introduced by the Lucerne Swiss Centre for the Advanced Training of Secondary Education Teachers (CPS), teachers' associations are closely involved in the establishment of the annual training activity programme, but it is not possible to determine whether the decision-makers' point of view has been taken into consideration;
6. Most activities both at canton and CPS level take the form of courses/seminars during which teachers from schools participate individually. However, if courses organised by CPS are occasions for inter-canton exchanges, other types of activity such as in-service training centred on the school or at the school and intended for teams of teachers still do not appear to have been instituted;
7. There is still very little induction into the first teaching post which forms a link between initial training and subsequent training activities.

The absence of a plan of the various training activities after initial training resulted in the discussion of a possible division of work between the cantons and institutions such as the CPS.

It should be mentioned that the CPS, which at present deals only with secondary II teachers, coordinates the courses but is not itself a training centre. Most of the time it is the teachers' associations which organise these training courses. The CPS is not the only centre which could be involved. In addition to the teacher training colleges already mentioned, there are the other teacher training centres, including the universities and the activities which they may organise at any time, structures providing supervision for schools, such as research institutes and teaching material which should be increasingly introducing integrated programmes including specialist advanced training courses. An example is the "Didaktikum" of Aargau, where students who have attended university with the intention of becoming teachers in district schools (the most advanced secondary I stream) are given one year's initial teacher training. However, in addition to its work of initial teacher training, this institute is responsible for advanced training, research and development. In the canton of Aargau primary and secondary I teachers can take a six-month advanced training course without loss of salary.

In the case of the division of labour, especially between CPS and the cantons in secondary education, therefore principally concerning general education teachers, it is essential to be pragmatic in order to avoid duplication of tasks, fill vacancies and complement canton and inter-canton activities. CPS is therefore directing its activities more towards cantons which take fewest initiatives. The idea has been put forward that, in future, the cantons should cover compulsory education and CPS concentrate its training activities on upper secondary education, particularly for teachers preparing pupils for the *maturité*.

In view of the need to provide advanced training for different levels, but to an increased extent multi-purpose training activities, i.e. those directed at several levels and/or types of teaching at the same time, it might be asked whether Swiss cantons need a "guiding light" for this. The job would be to establish at national level in close co-operation with all partners concerned (including decision-makers at all professional levels and institutions responsible for training) the principal lines of a policy for advanced training in relation to the major teaching and training objectives in Switzerland. An activity plan framework to cover several years could be prepared to include the various types of training available and those which the decision-makers would consider essential for the implementation of their policies. It might not be necessary to create a new institution. The examiners consider that the functioning of CPS as now envisaged, i.e. increasing its work of assessing the outcomes of its training activities, investigating methods of training experienced adults, and extending its ideas of national activities on the basis of research and development work, could be adapted. This would mean a transformation of CPS, which organises training courses and seminars for general secondary education teachers, into an organisation for encouraging the advanced training of teachers in Switzerland. While retaining some training initiatives in small sectors at national level (but not limited to *maturité* courses), the centre would have the primary role of anticipating and encouraging new activities, possibly of a longer term. The majority of training activities could be provided at local, canton and inter-canton level with the help of various bodies which offer training. This centre would make it possible for all authorities, including the highest, to provide what they considered necessary for the advanced training of teachers. Other sources of finance, even of a symbolic nature, of other parties involved could be added to that of CDIP and the Confederation. It may be confidently expected that as a result of Swiss pragmatism it will have a well-balanced management committee. On the other hand, as was mentioned earlier, the increased responsibility of this centre — its new name will naturally have to reflect its new duties — should result in an increase in human and material resources. The CPS resources at present are insufficient for the fulfilment of its tasks of assessment and research, which are essential for its long-term effectiveness. Any changes in its duties would hardly be sensible therefore without this collective effort to increase its resources and the systematic development of peripheral training activities fitting into the proposed framework and covering several years.

Any change of direction relating to the advanced training of teachers must be introduced into the more complex framework of the type of professionalism envisaged. Research work on the profile of teachers in the last 15 years has shown the importance of promoting within the teaching profession an open type of professionalism with a place for both the right and duty to continuing advanced training based on adequate initial training. If there is a duty, should action be taken against those who reject it? About 40 per cent of the secondary school teachers with whom CPS is concerned do not take part in any training. It is not known if these 40 per cent are trained elsewhere or if they consider that the training at present available is not relevant to their work. A thorough survey of requirements is therefore essential. Some cantons have made advanced training compulsory, thereby causing differentiation between in-service training – since it may take on the nature of compulsion – and voluntary advanced training partly based on the teacher's free time. Since it is essential to make some adaptations to the education system to satisfy the requirement of the people, we believe that it is sometimes essential to accept the compulsory nature of certain periods of training. Far from reducing the professional role of teachers, accepting this obligation will reinforce it. After all, can teachers avoid the same necessity for continuing professional updating and development as other professions? This will not exempt the different partners from tackling a crucial question: should those who make more effort to be trained, to participate in pilot activities and take part in research be recompensed and in what way? Some countries tend to weaken the equality of categories which is characteristic of the teaching profession and considered a factor responsible for a lack of mobility. Continuing training is a key factor in maintaining the vitality of any profession, including teaching.

Research and development in education

The examiners have stressed the importance they attach to participation by the various members of the teaching profession in R&D in education. These activities would still have to be extended and improved in different institutions to enable all concerned to participate and the results obtained to be evaluated and used if considered to be effective. In this field, Switzerland is again a land of contrast. First, as distinct from many other countries and not only the smallest, it has evaluated educational research and attempted to predict its future. Then it has set up at national level institutions, jointly financed by CDIP and the Confederation, to investigate both research and teaching materials in greater depth than at present possible under the mandates of these two authorities. Finally, Switzerland can be proud of its non-university institutes for research and teaching material which we consider well up to European standards.

It is naive, perhaps, to expect a country considered as second in the Western world in respect of the amount of R&D it undertakes to devote expenditure on educational research in the same proportion. It is no surprise to learn that no more effort is put into work of this nature in Switzerland than in other Western countries – which is not much. If reference is made to the recent review of Swiss science policy[1], it will be found that, for example, there has recently been only one truly national programme of educational research relating to "Education and Working Life" (PNR 10 completed in 1986). Some national research programmes such as PNR 21 on "Cultural Pluralism and National Identity" can certainly clarify the situation with regard to academic decisions in this field, but it appears to us that in view of their complexity some teaching and training problems would benefit from these national programmes covering several years. It is not the examiners' responsibility to recommend one field rather than another. They believe that the major subjects to be retained should emerge from national discussion on the course of action in an education policy which is more apparent at national level.

The choice should be made in step with research financed by the normal mechanism of the National Scientific Research Fund (*Fonds national de la recherche scientifique*, FNRS). This organisation has enabled progress to be made in education science research, as the recent OECD review indicates:

> "The third subject group (psychology, pedagogics, etc.) received an average of 13 per cent of the grants distributed by the relevant Division from 1982 to 1986. In line with the priorities set by the Swiss National Science Foundation, the educational sciences have been accorded relatively more importance than psychology and pedagogics in recent years. In 1986, grants requested and granted for fields such as pedagogics and the educational sciences for the first time exceeded those for psychology." (p. 52).

However, the question might arise whether provision in this field, which is particularly advantageous for universities, might not be difficult in view of the the fact that:

> "what was lacking is medium-term planning for university research, especially since the objectives of the Institutes did not always correspond to those of the Swiss National Science Foundation." (pp. 126/127)

In addition, as all specialists agree, research into educational theory is by its nature interdisciplinary. However, as the review of science policy in Switzerland indicates: "Inter-disciplinary research is difficult to implement in the existing university institutes. Very little applied- and, in particular, oriented research is being done in the social sciences. So the question arises whether the present research set-up is adequate to meet present and future needs". (pp. 16/17)

Oriented research does exist; it is found principally in canton or inter-canton pedagogical research institutes or departments. It is, therefore, another type, and not the least important, to be added to the range of research. However, as examples have already been quoted, R&D is only one of the several tasks of some of these institutions; sometimes, it is even non-existent, or has been given up in favour of training activities because of lack of staff and materials. In addition, some cantons, with small populations, have taken a long time to set up a educattional research department, or have still not done so.

This situation is encountered mainly in German-speaking Switzerland. A survey by M. Huberman[2] shows that around 1984 some departments had still not been fully staffed and that out of seven centres, five could be considered as small. For example, at that time there was one member of staff and a secretary at Fribourg and Basle-District, three to six members of staff at Soleure, St-Gallen, Lucerne, but ten at Berne and thirty at Zurich. Moreover, these educational research departments were designed principally for work at primary level. It was only very recently that some started work relating to the first cycle of secondary education. This change, which is a little more evident in French-speaking Switzerland, occurred as a result of pressure from primary school teachers who wanted some form of follow-up to their activities at the next higher level, from teachers in the first cycle and general and vocational upper secondary schools who are concerned with the quality of pupils leaving the first cycle. Finally, another common feature throughout Switzerland is the weakness of R&D in upper secondary education. In vocational training, the PNR 10 on "Education and Working Life" was an important start in this field, which is surprising in a country which has always given preference to a type of training that is undertaken by more than half the students at this level. Is it possible that the administration of this type of education is so free of problems to individuals and society that there is no need to follow its functioning and outcome so that it can be adapted as well and as rapidly as possible, if it becomes necessary? The PNR on "Education and Working Life" has certainly opened the way to other research associated with this subject, especially vocational training. It should be pointed out that there is considerable interest in an evaluation of this programme financed by FNRS and devoted to analysing the circulation of the results of the programme[3]. It can only be hoped that in the future major research projects will benefit from this type of survey by increasing the information about the conditions for accepting and establishing innovations in education.

This complex and contrasting situation with official and other organisations engaged in R&D, was the object of an in-depth analysis some years ago[4]. Few countries have made such an effort. The analysis was organised by the Swiss Society for Educational Research (*Centre suisse pour la recherche en éducation*, CSRE), in association with the Swiss Centre for the Co-ordination of Educational Research, which shows the part a dynamic national research association can play in a country with a federal structure. The analysis also resulted in the creation of a team to forecast the supply and demand of research, an exercise rarely carried out in countries said to be advanced in research[5]. The few interviews we had in Switzerland confirmed the criticisms of different observers relating to:

- The compartmentalisation of research and fragmentation of skills,
- Duplication of work or repetition of research,
- The small amount of research on a national scale owing to the shortage (with the exception of a recent case) of national research programmes,
- Mutual ignorance of research environments,
- The absence of concertation, and consequently the feeble effect on education policies.

The Swiss authorities may be reassured. They are in good company. The situation is similar in most OECD countries. The lack of resources and lukewarm support from some decision-makers and practitioners shows that education has a weak research image.

Cantonal and intercantonal institutions have been created for research and materials. We visited one of these, the *Institut romand de recherches et de documentation pedagogiques* (IRDP) at Neuchâtel. The activities of IRDP were appraised by the OECD in 1977. The examiners thus looked in detail at its various features and agree with the judgement of the appraisal that the Institute was exceptional in Europe for the following reasons:

- Three departments, corresponding to the three forms of supervision essential for academic institutions, are housed in the same building: research, documentation and teaching resources;
- The Institute is available for use by the public education departments in French-speaking Switzerland and Ticino, as well as by schools and teachers at compulsory education level;
- Teachers participate to a great extent in the Institute's activities.

We would also like to stress that this Institute has been able to maintain a constant link between practice and theory, which probably accounts for its lasting success, mainly owing to its R&D work in the field of teaching resources and the systematic evaluation of its results. Its area of activity and reputation for research have attracted a subsidy amounting to about 17 per cent in the form of a grant paid under the law regulating aid to universities and contributed to creating links with the university world. The active co-ordination of education in the French-speaking region owes much to the quality of its work and the energy and commitment of its staff. The latter have kept control of the "cost" of consensus, i.e. the sense of compromise, proportion, time and rigorous exploitation and presentation of the results of their work, to be achieved among eight very dissimilar cantons and regions. The teaching profession's interest in the results stems from the Institute's excellent knowledge and appreciation of the true work of teachers, constraints that affect their work, and the improvements that are required.

Although there must be limits to the work of the Institute, it is now desirable to extend its activities to include the more complex level of the first cycle of secondary education but also the upper secondary cycle. The examiners feel that the levels and types of education are still fragmented. IRDP demonstrates its interest, however, in seeing the process of teaching as a whole and this vision should be applied to education in general. This would require of course an increase in staffing and material resources, possibly in the light of the rapid changes affecting the preparation and circulation of teaching materials (e.g. introducing a Swiss documentation system as suggested below) to review the function of the resources department.

In view of the complexity of the problems to be dealt with at local and national level, the cost and difficulty of mobilising the required number of essential specialists, it is crucial that regular checks are made to ensure that there is no duplication of tasks among the various institutions engaged in R&D. This is because, in addition to the cantonal and intercantonal pedagogical research institutes, there is university research which produces high quality work: for example, in the Faculty of Psychology and Education Sciences of the University of Geneva. Unfortunately, in some sectors there appears to be distrust of the university, and even of conceptual or theoretical research. On the whole, the amount of research at present is more of a supplementary nature for clarification induced by decision-makers than strictly free research. The reserve over research findings, which may cast doubts on the bases of current policies and strategies, is naturally likened to the pragmatic Swiss custom of finding solutions to problems that have become essential. This spirit, which is possibly more marked in German-speaking than in French-speaking Switzerland, results in a tendency to "cantonise" research, which could easily be tackled more effectively for all concerned at a higher level, either intercantonal or national. It is obvious that some institutions engaged in research do not do sufficient to enable them to respond correctly to problems. Consequently, the examiners consider the recent proposal to create a Council for Research and Development in Education at national level to be particularly relevant. This Council should be given the duty of co-ordination, and not the direct task of R&D. Co-ordination would involve:

- Ensuring the regular evaluation of the research output;
- Determining R&D priorities for the whole country;
- Establishing a research programme with all partners over several years;
- Recommending, with cost/benefit in mind, the best institutions or group of institutions to carry out in-depth complex research and ensuring that all the partners share the benefit at national level;
- Coordinating within this framework the best methods of financing all research activities, and ensuring that the different types of R&D are in harmony with the various sources of public and private funds.

The Swiss authorities would no doubt ensure that all the partners concerned would be represented on the Council and its management committee. All the actions and types of education, including systems being developed, such as the various categories of adult education should be fairly represented.

It is essential that it be R&D, and not only research. It is also understood that, for practical reasons, many development activities would be co-ordinated and carried out much more at local than national level. Nevertheless, in some specific priority areas, development must have the benefit of salaried staff, incentives, and be followed up nationally before results are finally adopted by schools.

The term "*dispositif de pré-alerte*" heard at the time of our visit appears to apply to R&D in education. The area in which innovations are required is more distinct. There is thus no need to act quickly without carrying out any prior experiment since it is expected that the neighbours will fail or succeed before a decision is taken.

The base for the permanent Secretariat of this Council already exists with the Swiss Centre for Coordination in Educational Research (*Centre suisse de coordination pour la recherche en matière d'éducation*, CSRE) at Aarau, financed jointly by CDIP and the Confederation. This Centre does excellent work in publicising information on the progress and findings of research, including international research. However, its title would have greater significance if its work were included in a more dynamic R&D policy at national level. Since its current dissemination activities would be maintained, and even extended, if there were the change as indicated above, the staffing and material resources allocated to enable it to carry out the new tasks should also be reviewed.

There is another centre, with very similar evaluation and projection objectives to those of the CSRE. This is the Swiss Training and Education Resources Centre (*Centre de documentation en matière d'enseignement et d'éducation*, CESDOC) which has been mentioned on several occasions at the beginning of this chapter in one of the few reports in Switzerland on teachers. It, too, does excellent work preparing and circulating material and information relating to certain key elements on the functioning of the Swiss education system. It is regrettable that its terms of reference and resources do not enable it at present to provide more than simple literature, without significant comments, except possibly in the case of more quantitative analyses. Now that it is considered by the interested groups that clearer guidelines for a more coherent educational policy should be given, CESDOC should be given the authority to go further in its analyses to define more clearly the policies implied and underlying strategies, especially given the occasional absence of specific policies.

The transparency of detailed surveys, analyses, and summaries does not mean that any canton must automatically parade its successes. In addition, to assist co-ordination in the French-speaking region IRDP at Neuchâtel regularly prepares situation reports covering a sufficiently wide area in which everyone can recognise the principal problems without having to refute them. Whatever the circumstances, it is preferable to consider the situation as clear rather than risk hasty judgements based on false interpretation of unreliable information. It must be possible to analyse, evaluate and discuss the various reforms or innovations on solid foundations.

The work of the statistics and projections department of CESDOC on the number of compulsory education teachers or forecasts of students carried out every four years[6] also indicates that this Centre is able to carry out general surveys and projections including both qualitative and quantitative information. The use made of certain education statistics, though sometimes only slight, would tend to make institutions preparing general reports use too literary an approach – for example, some very interesting texts and projections from the CDIP teaching committee.

Thanks to its good relations both with the cantons and organisations at national or Confederation level, CESDOC appears to be the best place for the preparation not only of analytical reports and, more important, forecasts, but also of situation reports which should be regularly prepared to assist discussion at local and national level of prospects for the future of education on a sound basis. In other words, the future role of CESDOC should be to act as a "guiding light" which it has not really been until now, possibly because of the lack of a firm commitment on the part of the various groups potentially interested in this type of work. The current joint CDIP/Confederation financing could be reviewed, as could the composition of its supervisory committee, if it were considered necessary to reinforce the independence of CESDOC in relation to providers of funds directly involved in policy formulation.

If its work is to take on a new direction, then its operational procedures should also be reviewed, including in the present context introducing the Swiss Education Resource System (*Réseau suisse de documentation éducationelle*, RESEDOC) in which it is involved. Some of our interlocutors were astonished at both the slowness of the launching of this difficult project and the uncertainties which still exist over the financial conditions for its operation. In connection with what we previously suggested for IRDP as regards teaching material, we believe that if CESDOC had to mobilise its resources, it should explain at local, intercantonal and national level the general problem of the development and circulation of educational materials.

There remains the question of co-ordination, resourcing and siting of the institutes discussed above. Over the longer term it is uncertain whether a marked difference in functions should be maintained between CESDOC at Geneva and CSRE at Aarau. It might be necessary to maintain two institutions — one engaged in assessment and projections from quantitative and qualitative information and R&D, the other concentrating on preparing and distributing teaching materials and R&D findings.

For historic and political reasons these institutions are a long way from Berne, where both CDIP and the Confederation authorities are based. This is satisfactory for the necessary scientific independence of the work mentioned above, including for CESDOC the proximity of the International Education Bureau (a UNESCO organisation). It might also be considered that, to paraphrase a proverb, "when something is not apparent, it will not be wanted". It would not be helpful for an institution such as CESDOC, which collaborates with the Federal Statistical Office in Berne, to be a long way from the various institutions which, because of the new directions in which its work is going, it would be sensible to have split up. It would be preferable to institute combined action by the different institutions responsible for the collection and analysis of information on education. The experience of each would ensure that progress could be made in the necessary plan to standardize and collect certain basic information for Switzerland as a whole.

The problem of providing good education statistics is real and efforts must be made at different levels to fill the worst gaps. It is essential both for intercantonal co-operation within direct national guidelines and the desired development of co-operation in Europe, and internationally. The recent interest of the Swiss authorities in the CERI project on educational indicators is proof of this but at the same time the means for collecting information to illustrate them must certainly be instituted. We consider therefore that the work of improving the basis for statistical information on education should be introduced within the wider and more complex framework of a systematic policy of R&D on education.

Finally, there are a large number of institutions, initiatives and authorities which could enable the desirable developments to have a proper underpinning and to accelerate changes already in progress. The multiplicity of excellent experiments in the training of teachers, especially initial training, if correctly assessed, should permit fruitful dialogue at regional and national levels. Although activities for advanced training appear more traditional, some institutions that supervise schools, such as educational research institutes of a reasonable size, do excellent work and should be created throughout the country as soon as possible, but putting the accent on the neglected upper secondary level. A considerable effort is being made to produce and distribute teaching material, but in view of the lack of R&D and of statistical information on education, there could be a temptation to find an excuse to avoid aiming at more thorough and regular analysis of all the dimensions of the education systems. It would also be necessary to make up for this delay within the next few years, particularly in relation to the major European countries, by giving priority to the resources required for the institutions concerned. It will be possible to make this effort with the potential resources of the various Swiss public authorities concerned, including if necessary redistribution of resources to benefit the most backward or least favoured communities, or both.

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Chapter 7

POSSIBLE IMPLICATIONS AT THE INSTITUTIONAL LEVEL

In the light of the trends, problems and issues previously discussed, the purpose of this concluding chapter is to consider the structures and processes of decision-making, implementation and monitoring required for the corresponding policies and strategies.

It is now essential for the internal development of the *education system in Switzerland* and its relations not only with other sectors of Swiss society but also with Europe that the educational policies of the cantons should comply more systematically with national guidelines, while conserving their own traditions. These guidelines, paving the way for and indicating the direction of the most appropriate form of long-term development for all the parties concerned, should apply to an entity that could eventually be described as the *Swiss system of education and training*.

The scenario that we favour for the future is the third of those mentioned in Chapter 3: "...appropriation by the cantons and their specificities of the strong and energetic impulses given, in a world where tradition has to know when to give way to innovation, at national level ... In this scenario, the federal dynamic and cantonal socio-economic forces reinforce one another to maintain through the education system, in typical Swiss fashion, the diversity that is an essential feature of the country's identity and gives it the dynamic to enable it to modernise".

Three main questions should be addressed:

- are education and training institutions in their present form capable of responding to new needs or should others be created?
- are they sufficiently well equipped to carry out their new tasks in a balanced manner?
- what role should be assigned in the future to the partnership system in the formulation, implementation and monitoring of policy?

The essence of the problem

What strikes the foreign observer immediately is the contrast between Switzerland's economic dynamism within the domestic and international market, and the relatively static character of its system of education and training. Admittedly, this may derive from social stability which, in turn, is reflected in the education system. However, whereas the dynamism of much of business and industry is rooted in R&D and relatively long-term forecasting and planning, incorporating both quantitative and qualitative data, the system of education is administered on a short-term basis, pragmatically, which certainly has advantages, but sometimes under the pressure of events, occasionally by resort to expedients and often without basic data or an adequate set of principles. Employers' representatives, for example, cited the slow reaction to the necessity of introducing computers in schools.

It can also be argued that full advantage is not being taken of the inherently rich diversity of the cantons and the different solutions they find for pressing problems, through failure to evaluate results on the basis of generally accepted standards. Paradoxically, a system that is supposed to train individuals to think and act and be self-reliant finds itself more or less immobilised because of a lack of long-range, conceptual analysis. The system is better equipped to solve problems once they arise than to anticipate them. However, the future of all post-industrial societies depends on their ability to identify and deal with emerging problems, before it is too late.

What Switzerland's experience shows is that proximity and opportunities for dialogue do not necessarily favour the emergence of joint projects and decision-making. The search for a consensus between cantonal partners with conflicting points of view ends up in either watering down or withdrawing important reforms. The search for the lowest common denominator sometimes gives rise to contradictory measures that may satisfy the parties concerned, but turn out to be difficult to implement.

There comes a time when interpersonal relationships can no longer be a substitute for viable requisite structures. At worst, there is a risk of differences among cantons, creating a lack of interest in a proposed joint policy or, at least, in the formulation of common policy thrusts that each would of its own accord endeavour to apply on the basis of its particular experience, resources and possibility of obtaining assistance from its partners.

No one can deny the advantages of Switzerland's federal system, which everyone is anxious to preserve. But the application of its rules in practice, especially in the specific functioning of the education systems, leads to bottlenecks and delays in key sectors. One of the advantages is that the long process of seeking a consensus often leads to solutions that may be more relevant than those adopted in haste or in a flush of initial enthusiasm, but without sufficient thought and analysis. A disadvantage is that the cost is great in terms of the time required to reach a negotiated solution, of the lead time required before getting to grips with a problem, and the financial outlay. When a solution has been hammered out, it is often no longer the right one. How can the situation be improved?

Is there a need for one or more new institutions?

Any federal system has, by necessity, to create a number of structures for joint consultation and decision-making. One has therefore to resist the temptation to insert new elements into an already complex and overloaded fabric. Nonetheless, in education and training, an important piece of the jigsaw is missing. The two main partners, the CDIP and the Confederation, currently concerned with the future, have completely different remits and no joint machinery for the analysis, discussion and formulation of policy guidelines which cantons could translate into specific and practical measures.

An analogy is to be found in the machinery set up by the Swiss authorities for universities. The Swiss University Conference (CUS) is the meeting ground for the Confederation and the cantons and other interest groups. Although this is a joint body, the Confederation respects the sovereignty of the cantons in educational matters, as witnessed by the fact that the Chairman of the CUS is always the Director of Education of one of the university cantons. Admittedly, we were told on several occasions that the prickly discussions between the Confederation and the cantons on university matters did not provide grounds for optimism about the effectiveness of similar structures. There are always risks of stalemate or opposition to change, particularly when the actors have not always been in the habit of working towards the same end or have not been presented with a clear and specific common mission from the outset.

However, the game is surely worth the candle, particulary if the other components in a structure of this kind are properly chosen so as to represent fully all interest groups. What might be described tentatively as the *Higher Council on Education and Training* would be called upon to discuss the future of all formal education and training institutions, apart from the universities, including those entrusted with the arduous task of formulating in the very near future the guidelines for adult education and continuing vocational training. If need be, a liaison committee could deal with all matters involving the co-ordination of policies likely to have a reciprocal effect on the institutions covered by the respective remits of the two bodies.

In proposing this forum for co-operation we would expect that its co-ordinating effect would help to steer the interests of those concerned towards a common goal and along different lines from those followed at the present time. The relevant Confederal bodies would be able to explain in detail the implications of national and European socio-economic trends and the need for international co-operation in implementing education and training policies.

Having assessed their own situation, the education authorities could then discuss the implications of these trends at their level. The background against which this discussion takes place should be made as clear as possible by means of a report on the state of education in the whole country which could be established on the basis of more refined statistical and qualitative data of the kind suggested in Chapter 6. In particular, and in contrast to what happens at the moment as regards forecasts of student numbers, the guidelines that would emerge from this discussion should not be based simply on a forecast of numbers and resources calculated solely on the basis of social demand but on an assessment of broad skill requirements. In other words, this body would provide a general framework for an active forward-looking policy for the system, which the cantons and their partners would put into effect, while adapting it to their own requirements.

Should the existing institutions be strengthened?

Even outside the proposed new structure, it is essential that each partner should have a sufficiently strong and coherent structure to carry out the task entrusted to it. It is often said that, for a constructive dialogue, it is necessary to have a partner who has a solid power-base and can properly represent the interests he is supposed to defend. We shall be looking at two aspects: the division of responsibilities, in particular at the level of the Confederation, and the scope of the provisions of the Concordat.

At the level of the Confederation

It is detrimental that there should still be a division of responsibility in the field of education and training between the departments at the federal level, which are reflected as well at the cantonal level. For instance, what would be the advantages and disadvantages of assigning the gymnasiums and the universities, at least in part, to the Department of the Interior and vocational training to the Department of the Economy?

Everyone in Switzerland is convinced that the close association between economic policy and vocational training has saved the country from the heavy burden of youth unemployment that so many OECD countries have had to contend with during the difficult years of recession, and that this is still one of the major factors sustaining full employment. However, two issues are raised by this report:

i) The updating of skills within the vocational training sector and the difficulty of keeping in step with the quickening development of higher technical education and the still somewhat unclearly defined framework of continuing vocational education;

ii) The cohesiveness of the operations of all of the elements within the system of education and training and the possibilities of transfer from one level or type of education to another.

The examiners are fully aware of the delicacy of the problem of dealing with the respective powers of departments at both federal and cantonal level. There are two avenues that might be explored.

The first would involve positive strengthening of co-operation between the various authorities responsible for policy for upper secondary general education, vocational education and higher university and non-university education. This might make it easier to solve the problems of moving from one echelon to another, and of permeability, for example, at the level of secondary and tertiary education, so as to make fuller use of the research findings on education and on the education/employment relationship viewed from either side.

The second avenue concerns the present division of functions within the federal structure. The examiners wonder whether the economic proximity within the Department(s) of the Economy will continue in the future to be as much to the advantage of vocational training as it has been in the past. An effort is being made to use this co-ordination to align more closely overall industrial strategy requirements and technology policy. The two chambers of parliament have recently debated a "Proposal for special measures for continuing education and training", which represents a promising attempt at co-operation between federal departments. In addition, the idea of setting up a joint body on education and research within the Federal Department of the Interior has also been discussed. We wonder whether vocational education might not benefit as much, if not more, from this proximity whereby new industrial and technology strategies could be discussed and formulated, as would also the university institutions. Given the practical and policy implications of such a proposal for responsibilities at the federal level, the examiners submit this idea solely in the hope that it will give rise to more long-range consideration of the type of federal structures that are likely to be the most efficient in the area of education and training.

The federal level suffers from a fragmentation of the services responsible for relations with international organisations dealing in particular with questions of education and training. In view of the importance of some international research, it would be worthwhile to investigate whether both the federal sectors concerned and the cantons through their various representative bodies are making good use of its findings, some of which are useful in that they help to conceptualise problems and promote an overall view of the functioning of education and training systems.

In the context of the Concordat

When the Concordat was signed it was considered a major step forward. The cantons were able to show that they could organise themselves, bearing in mind the proposal in the air to give the federal authorities more power to regulate a system whose fragmentation was beginning to impede the mobility of labour and families. The role of this Concordat became even more important when this proposal was only narrowly defeated in 1973, after failing to obtain the support of a majority of cantons, whereas a proposal to expand federal activities in the research area was approved. Twenty years have passed since then and what the various parties concerned are asking is what has been the outcome.

Opinions differ radically. Supporters of unconditional federalism consider that the major substantive aims, as set out in Article 3, have been achieved, arguing that the framework for permanent co-operation between cantons as set out in Articles 3 and 4 is sufficient to cope with the new demands that are being placed on the systems of education. Those who argue in favour of more positive joint initiatives at national level to co-ordinate cantonal action more effectively consider that the form of co-operation set out in the Concordat and orchestrated by the CDIP is no longer capable of dealing with the new changes required in the various cantonal systems.

Insofar as the scenario which we favour takes account of the officially or unofficially expressed refusals to assign greater responsibilities to the Confederation, it seems that the Concordat, even in its present form, will be what its members wish to make of it. If those cantons which have shown the greatest reluctance to adopt a joint approach to certain emerging needs agree to the main changes considered necessary by Swiss society as a whole, the internal momentum thus created could very well be based on a Concordat that would need at most to be amended to take account of what has happened over the past twenty years. Should there be persistent opposition or deadlock on certain issues which public opinion would like to see settled once and for all, it is very likely that, as in the early 1970s, there would be some who would advocate a strengthening of the Confederation's powers. At which point, would the cantons still be able to resist?

But how to go about creating this internal momentum? What we have in mind is the potential impact of the new structure suggested above and the reports, studies and new data that will provide a clearer insight into the problems that the future holds in store and a more solid basis for the recommended guidelines. We also think that the structures and resources of both the CDIP's permanent secretariat and the regional co-ordinating bodies should be looked at to see whether they are capable of dealing with the challenges that must be faced.

Not having detailed information about the way some regional co-ordinating bodies go about taking decisions, the examiners are not in a position to say whether what might be at fault is the structure of this co-ordinating body or the lack of a common political will on the part of the cantons concerned.

There is some evidence to indicate that this second assumption is not always valid. For example, when a group of Education Department Heads from the Regional Conference for North-West Switzerland found out about OECD's work in the education field during the course of a visit in 1988, they were keen to request a review of the situation in their own region and their visit was one of the events that triggered off the present review. Contrary to the general belief that the degree of co-ordination in French-speaking Switzerland and Ticino is exemplary, it is a fact that co-ordination in central Swizerland is particularly well advanced. An audit of the structures set up by the different regional conferences could help to enlighten the various officials on the kind of adjustments that might prove necessary.

For instance, we are convinced that the excellent work carried out with the help of many partners and co-ordinated by the CDIP's *Commission Pédagogique* would have a far different impact in a context where it would be incorporated into national guidelines accepted by the cantons themselves, which would be taking steps to implement them within their own area and at regional level.

The role of the partnership system

Many partners in education and training sit on various review and advisory commissions at different levels within the decision-making hierarchy. Given the number of key issues that these various reform commissions have examined and the limited number of findings which have been acted upon by the decision-makers who sought their views, it is legitimate to ask how effective this partnership system is. The examiners were struck by two examples of a quite different character.

The first was the reform of gymnasiums. In its description of the stages of this reform the Background Report clearly shows that the stumbling blocks arose from the refusal by the majority of gymnasium heads and teachers to accept the changes proposed:

- as a result of the 1972 report on "Secondary education tomorrow";
- in 1980 as a follow-up to the proposals made by the Secondary Education Commission.

Currently, a hundred or so teachers are involved in a new project, the aim of which is to design core curricula for the *maturité* schools to apply throughout the country. Initial results are expected. How will this new group of professionals and officials of the associations concerned react to these new proposals?

The situation becomes even more complicated when the federal authorities responsible for monitoring changes in *maturité* courses and the cantonal or supra-cantonal authorities responsible for administering this highly complex system are brought into the process. As law-maker and enforcer (*Commission fédérale de maturité, Ordonnance fédérale de maturité*), the Confederation in this complex system of partnership, where some cantons can enlist the support of the corporatist interests upheld by other partners in order to resist new ideas more effectively, appears to be acting as a brake although its officials, like many other partners, would welcome steady progress in line with all the essential requirements that have to be met at this level.

In short, what needs to be clarified when formulating new policies and strategies is, on the one hand, what forms part of the dialogue and participation phase and, on the other, what forms part of the final decision-making by those who have to implement, monitor and evaluate these decisions. Some existing mechanisms place undue emphasis on the active involvement of various corporative interests which are superimposed on what may already be divergent political and cultural concerns. In the long run, democratic institutions will operate effectively only if, after a full discussion, they allow those in whom authority has been vested to settle an issue once and for all. The history of the reform of *maturité* studies is a good illustration of this, and all of the authorities concerned would do well to think of ways of ending the disarray.

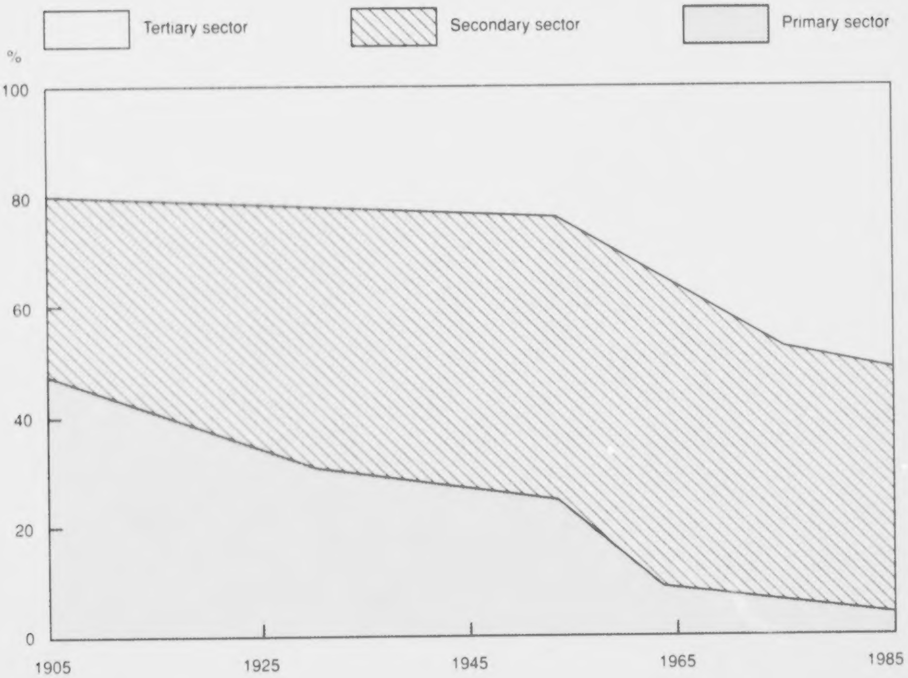
The second example is the broader and more complex issue of the relationships between the system of education and training and the economy, not least with employers whose concern is to ensure an adequate supply of manpower in both quantitative and qualitative terms. Curiously enough, there are serious bottlenecks in the supply of skilled labour, despite the fact that some of the vocational training services come under the Department of the Economy.

We have pointed out the extent to which the education and training system is compartmentalised. Those employed in general education are often ignorant of the world of business and industry, or consider this to be the responsibility of their colleagues in vocational education. However, what concerns us is the way messages from employers reach the trainers. As in other countries, are these messages unclear or not sufficiently specific? Do they get to the right people? Are employers aware of the complexity of the education system? Are there adequate structures for discussion of the education and employment relationship where each major partner can state his views, policies, and strategies? The examiners stress the need for clarification on these points so that the perception that people abroad have of the relationships between education, training and the economy in Switzerland can be based on a sounder knowledge of the facts.

In short, we have the impression that the idea of partnership is firmly rooted in Switzerland and at all levels of the decision-making hierarchy. This hierarchy is in itself complex, however, since what has to be set up in the first place is an internal partnership of decision-makers in the public sector in order that the federal system can function properly. In this complex situation, the addition of an "external" partnership as an essential component in the decision-making process and as a potential aid in implementing decisions should allow a degree of co-ordination and assist policy-makers in formulating and applying the most appropriate decisions. The example of educational co-ordination in French-speaking Switzerland may be cited where, as everyone knows, headway is being made thanks to the forcefulness and drive of the local teaching body. This is the type of partnership model that should be applied and operated wherever possible.

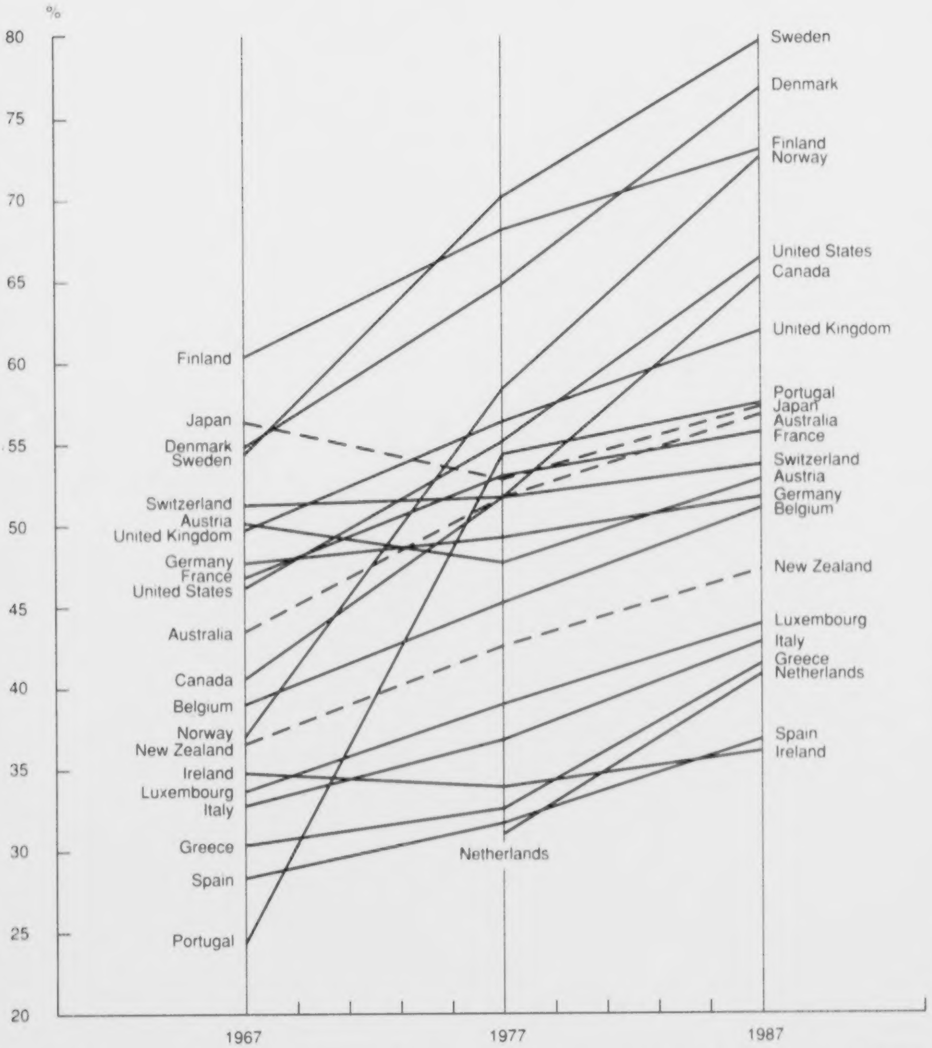
STATISTICAL ANNEX

Figure A.1. **Breakdown of the labour force by sector from 1905 to 1985**



Source : Office fédéral de la statistique.

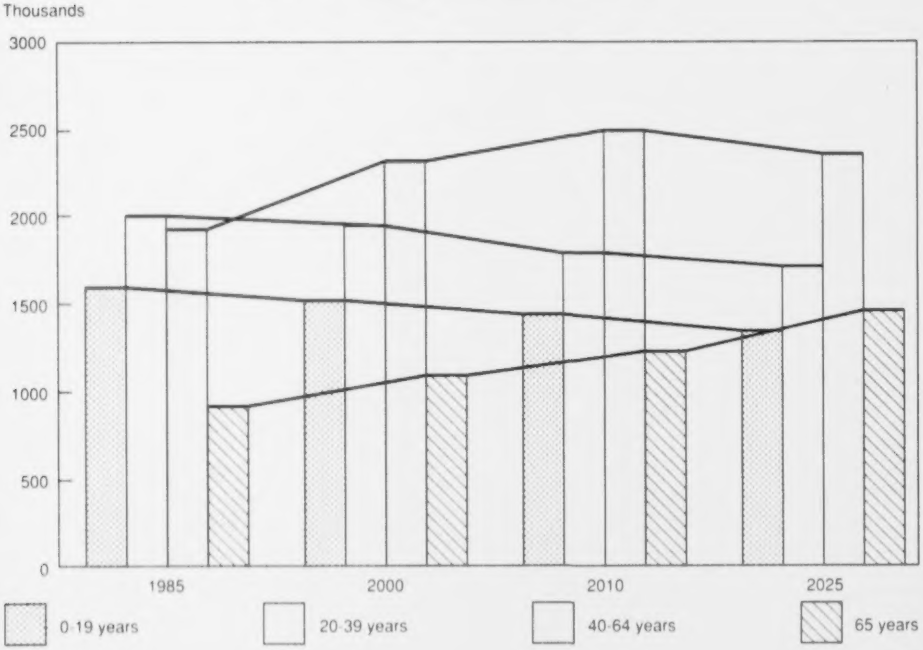
Figure A.2. **Female participation rates in the OECD**[a] **(1967-1987)**



a) The female labour force participation rate is defined as the female labour force of all ages divided by the female population aged 15-64. The most recent data shown refer to 1986 in the case of Belgium, Denmark, Ireland, Luxembourg, the Netherlands and Switzerland, and to 1985 in the case of Greece and New Zealand.

Sources *OECD Employment Outlook*, September 1988.

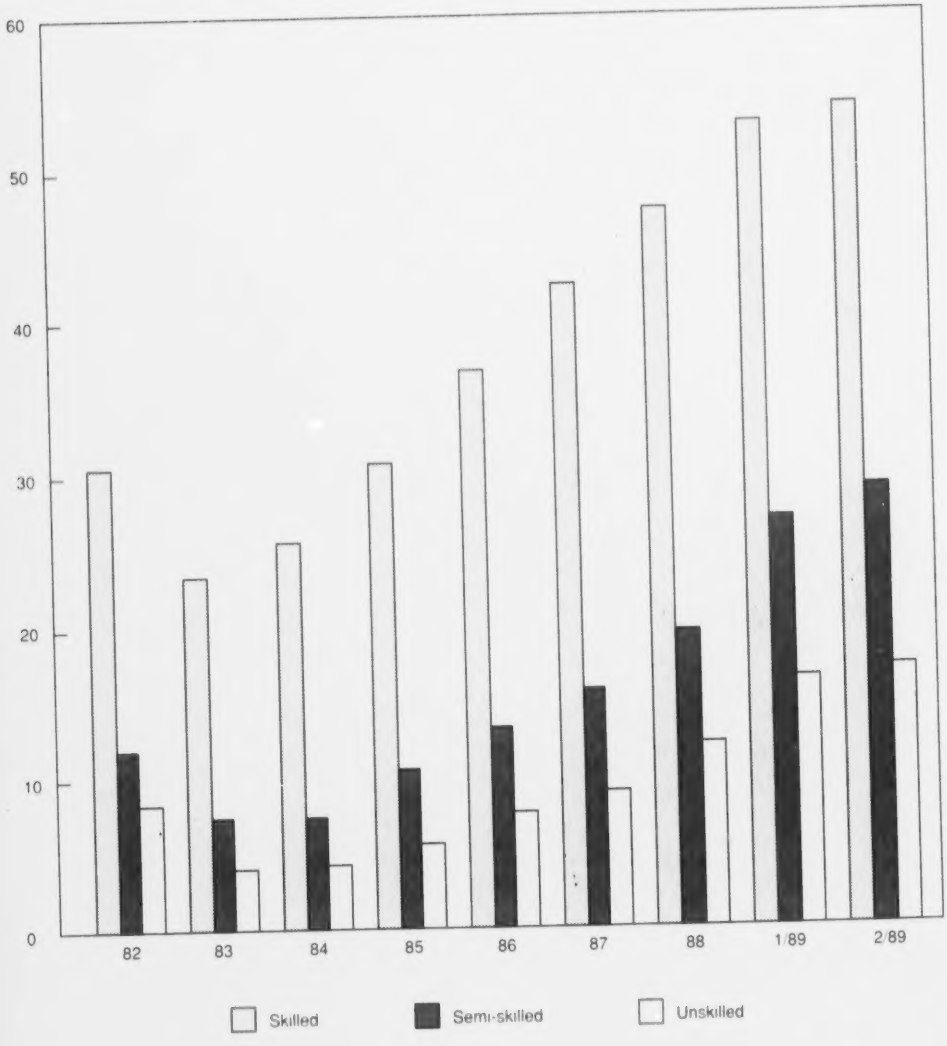
Figure A.3. **Demographic structure**[a] **1985-2025**



a) Principal variant.

Source : OFS, *La vie économique*, October 1989.

Figure A.4. **Percentage of firms with a shortage of personnel, 1982 to 1989**



Sources : OFS, OFIAMT, *La Vie economique*, October 1989.

Table A.1. Switzerland and the EEC and EFTA countries
Some basic statistics: international comparisons

	Units	Reference period	EEC countries				
			Belgium	Denmark	France	Germany	Greece
Population							
Total	Thousands	1987	9 868	5 130	55 627	61 149	9 998
Inhabitants per sq. km	Number		324	119	102	246	76
Net average annual increase over previous 10 years	%		0.0	0.1	0.4	0.0	0.7
Employment							
Total civilian employment (TCE)	Thousands	1987	3 645 (86)	2 630 (86)	20 988	25 456	3 601 (86)
of which: Agriculture	% of TCE		2.9	5.9	7.1	5.2	28.5
Industry	% of TCE		29.7	28.2	30.8	40.5	28.1
Services	% of TCE		67.4	65.9	62.1	54.3	43.4
Unemployment	%	1987	11.1	7.8	10.5	7.9	7.4
Labour force participation rates by sex							
Males	%	1987	75.2	87.2	75.6	79.9	75.8
Females	%		50.2	75.9	55.7	55.7	41.7
Gross domestic product (GDP)							
Per capita	US$	1987	14 071	19 750	15 818	18 880	4 719
Gross fixed capital formation	% of GDP	1987	16.3	18.8	19.4	19.4	17.4
General government							
Current expenditure on goods and services	% of GDP	1987	16.3	25.4	19.1	19.8	19.5
Indicators of living standards							
Private consumption per capita	US$	1987	7 593	7 236	7 796	7 374	4 273
Foreign trade							
Exports of goods	% of GDP	1987	59.8	25.3	16.8	26.2	13.9
Imports of goods	% of GDP		59.9	25.1	17.4	20.4	27.9
Gross domestic R&D expenditure	% of GDP	1987	1.61 (86)	1.24 (85)	2.28	2.71	0.33 (86)

Sources: *OECD Economic Surveys. Switzerland*, OECD, Paris, 1989;
OECD Employment Outlook, July 1989, OECD, Paris, 1989;
Reviews of National Science and Technology Policy, Switzerland, OECD, Paris, 1989.

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Table A.1. *(Continued)*

	Units	Reference period	EEC countries				
			Ireland	Italy	Luxembourg	Netherlands	Portugal
Population							
Total	Thousands	1987	3 542	57 331	372	14 671	10 280
Inhabitants per sq. km	Number		50	190	143	432	112
Net average annual increase over previous 10 years	%		0.8	0.3	0.3	0.6	0.7
Employment							
Total civilian employment (TCE)	Thousands	1987	1 068 (86)	20 584	164 (86)	5 135 (86)	4 156
of which: Agriculture	% of TCE		15.7	10.5	3.7	4.9	21.9
Industry	% of TCE		28.7	32.6	32.9	25.5	35.8
Services	% of TCE		55.5	56.8	63.4	69.6	42.3
Unemployment	%	1987	17.5	11.0	1.6	8.7	7.1
Labour force participation rates by sex							
Males	%	1987	84.3	79.0	. .	75.0	84.7
Females	%		38.5	43.4	. .	41.9	57.4
Gross domestic product (GDP)							
Per capita	US$	1987	8 297	13 224	16 138	14 530	3 761
Gross fixed capital formation	% of GDP	1987	17.4	19.9	22.6	20.3	25.3
General government							
Current expenditure on goods and services	% of GDP	1987	18.0	16.7	16.7	16.1	14.4
Indicators of living standards							
Private consumption per capita	US$	1987	4 378	7 543	8 694	7 461	4 167
Foreign trade							
Exports of goods	% of GDP	1987	54.8	15.4	. .	43.1	25.3
Imports of goods	% of GDP		64.8	16.6	. .	42.4	36.7
Gross domestic R&D expenditure	% of GDP	1987	0.92 (86)	1.28	. .	2.21 (86)	0.45 (86)

Sources: *OECD Economic Surveys. Switzerland*, OECD, Paris, 1989;
OECD Employment Outlook, July 1989, OECD, Paris, 1989;
Reviews of National Science and Technology Policy, Switzerland, OECD, Paris, 1989.

Table A.1. *(Continued)*

	Units	Reference period	EEC countries		EFTA countries		
			Spain	United Kingdom	Austria	Finland	Iceland
Population							
Total	Thousands	1987	38 830	56 890	7 575	4 932	245
Inhabitants per sq. km	Number		77	232	90	15	76
Net average annual increase over previous 10 years	%		0.7	0.1	0.0	0.4	1.0
Employment							
Total civilian employment (TCE)	Thousands	1987	11 370	24 987	3 297	2 414	117 (86)
of which: Agriculture	% of TCE		16.1	2.4	8.6	10.2	10.3
Industry	% of TCE		32.0	29.8	37.7	31.2	36.8
Services	% of TCE		51.8	67.8	53.7	58.4	53.0
Unemployment	%	1987	20.5	10.2	3.5	5.1	0.5
Labour force participation rates by sex							
Males	%	1987	77.9	88.3	81.0	81.4	. .
Females	%		37.5	62.6	53.1	72.9	. .
Gross domestic product (GDP)							
Per capita	US$	1987	7 449	11 765	15 470	18 151	21 813
Gross fixed capital formation	% of GDP	1987	20.7	17.3	19.4	22.6	23.5
General government							
Current expenditure on goods and services	% of GDP	1987	14.4	20.9	19.0	20.7	17.7
Indicators of living standards							
Private consumption per capita	US$	1987	5 521	7 731	6 535	6 966	9 930[a]
Foreign trade							
Exports of goods	% of GDP	1987	11.8	19.7	23.8	22.1	25.8
Imports of goods	% of GDP		17.0	23.2	27.7	21.4	29.9
Gross domestic R&D expenditure	% of GDP	1987	0.57 (86)	2.42 (86)	2.28	1.60	0.73 (86)

a) At current prices and exchange rates.

Sources: *OECD Economic Surveys. Switzerland*, OECD, Paris, 1989;
OECD Employment Outlook, July 1989, OECD, Paris, 1989;
Reviews of National Science and Technology Policy, Switzerland, OECD, Paris, 1989.

Table A.1. *(Continued)*

	Units	Reference period	EFTA countries		
			Norway	Sweden	Switzerland
Population					
Total	Thousands	1987	4 184	8 399	6 610
Inhabitants per sq. km	Number		13	19	160
Net average annual increase over previous 10 years	%		0.3	0.2	0.5
Employment					
Total civilian employment (TCE)	Thousands	1987	2 090	24 987	3 219 (86)
of which: Agriculture	% of TCE		6.1	4.2	6.5
Industry	% of TCE		27.0	30.2	37.7
Services	% of TCE		66.3	65.6	55.8
Unemployment	%	1987	2.1	1.9	0.7
Labour force participation rates by sex					
Males	%	1987	87.9	84.8	89.8[b]
Females	%		72.3	79.4	54.6[b]
Gross domestic product (GDP)					
Per capita	US$	1987	19 756	18 876	25 848
Gross fixed capital formation	% of GDP	1987	28.0	19.0	25.2
General government					
Current expenditure on goods and services	% of GDP	1987	20.9	26.7	12.8
Indicators of living standards					
Private consumption per capita	US$	1987	8 155	7 273	9 349[a]
Foreign trade					
Exports of goods	% of GDP	1987	26.2	27.9	26.6
Imports of goods	% of GDP		27.0	25.5	29.6
Gross domestic R&D expenditure	% of GDP	1987	1.82	2.93[b]	2.89 (86)

a) At current prices and exchange rates.
b) Social and human sciences excluded.
Sources: *OECD Economic Surveys. Switzerland,* OECD, Paris, 1989;
OECD Employment Outlook, July 1989, OECD, Paris, 1989;
Reviews of National Science and Technology Policy, Switzerland, OECD, Paris, 1989.

Table A.2. **Age structure**

As a percentage of total population

	Under 15				15 to 64				65 and over			
	1980	2000	2020	2040	1980	2000	2020	2040	1980	2000	2020	2040
EEC countries												
Belgium	20.0	18.3	16.3	17.3	65.6	67.0	66.0	60.8	14.4	14.7	17.7	21.9
France	22.3	19.2	17.0	17.9	63.8	65.5	63.6	59.4	14.0	15.3	19.5	22.7
Germany	18.2	15.5	13.4	15.2	66.3	67.4	64.8	57.2	15.5	17.1	21.7	27.6
Spain	25.9	19.8	15.9	18.0	63.3	65.8	67.1	59.4	10.9	14.4	17.0	22.7
United Kingdom	21.1	20.5	19.9	17.9	64.0	65.0	63.8	61.7	14.9	14.5	16.3	20.4
EFTA countries												
Austria	20.5	18.8	16.8	17.3	64.0	66.3	63.8	58.7	15.5	14.9	19.4	23.9
Sweden	19.6	17.4	16.3	17.4	64.1	66.0	62.0	60.1	16.3	16.6	20.8	22.5
Switzerland[a]	19.7	16.4	14.5	15.1	66.5	66.9	61.1	56.7	13.8	16.7	24.4	28.3
Switzerland[b]	19.7	16.7	14.5	13.9	66.5	67.5	65.3	62.7	13.8	15.8	20.2	23.4
OECD[c]	23.4	19.5	17.2	17.9	64.4	66.6	64.9	60.2	12.2	13.9	17.9	21.9

a) Data submitted by the Office fédéral de la statistique, main scenario 2A-86.

b) i.e. maintenance of the low fertility level of 1.53 for the Swiss and 1.64 for foreigners, practically identical life expectancy, moderate immigration in the context of a policy aimed at stabilizing the proportion of foreigners (15.3 per cent as from 1990).

c) Unweighted average for the 24 OECD countries.

Sources: OECD, *Ageing Populations: The Social Policy Implications*, Paris, 1988. *OECD Economic Surveys: Switzerland*, OECD, Paris, 1989, Table 16.

Table A.3. **Structure of the population of permanent residence from 1970 to 2025**

31 December

Age group	Number of persons (in thousands)							Percentage		
	1970[a]	1975[a]	1980[a]	1987[a]	1990[b]	2000[b]	2025[b]	1970[a]	1985[a]	2000[b]
0-19	1 920.6	1 870.4	1 744.5	1 581.9	1 547.7	1 532.6	1 347.6	31.0	24.9	22.4
20-39	1 843.0	1 886.9	1 914.2	2 041.9	2 044.3	1 923.7	1 725.5	29.8	31.0	28.2
40-64	1 718.8	1 757.2	1 797.7	1 996.2	2 073.6	2 295.6	2 341.8	27.8	29.9	33.6
65-79	600.9	672.6	710.4	720.5	734.0	810.3	1 092.5	9.7	10.9	11.9
80 and over	109.8	133.9	168.5	226.3	245.6	268.2	373.9	1.8	3.2	3.9

a) 1970-1987: Annual federal population estimates (ESOP).

b) 1990-2025: Principal scenario 2A-86.

Source: Federal Statistical Office, *Population Trends.*

Table A.4. **Labour force participation rate by level of attainment, by age and sex, 1986**

Percentage

Level of education	Males						Females					
	Total	20-24	25-34	35-44	45-54	55 +	Total	20-24	25-34	35-44	45-54	55 +
Total	82.3	91.2	97.7	98.1	97.5	48.7	49.0	82.7	58.1	61.5	58.7	19.8
Level A	71.7	95.2	96.2	93.5	93.5	44.6	37.6	62.1	53.5	56.7	53.0	19.0
Level B	85.3	95.0	98.9	98.6	99.0	49.5	54.4	89.3	56.1	63.0	60.2	20.7
Level D	86.9	. .	96.7	100.0	100.0	50.0	62.0	. .	78.9	60.0	. .	36.4
Level E	82.8	52.9	95.6	98.7	100.0	59.0	56.9	65.4	64.6	65.3	77.4	20.0

A: Compulsory education.
B: Completion of apprenticeship, or qualifying examination for university study, or teacher training school.
D: Technical training (ETS, ESCEA and others).
E: Higher education.

Source: "Educational Attainment of the Labour Force", in *Employment Outlook*, OECD, Paris, July 1989, Table 2.B.1.

Table A.5. **Labour force in employment[a], and labour force participation rate, 1960-1986**

Economic sector, sex, nationality	Labour force in employment (in thousands) and labour force participation rate									
	1960	1970	1975	1980	1981	1982	1983	1984	1985	1986
Primary sector	393.4	268.5	237.4	219.5	216.5	214.4	212.1	210.7	209.7	209.2
Secondary sector	1 262.7	1 450.6	1 322.8	12464.2	1 274.8	1 239.8	1 198.7	1 190.9	1 204.0	1 222.0
Tertiary sector	1 061.1	1 423.4	1 556.3	1 686.2	1 719.4	1 735.4	1 738.3	1 740.3	1 757.2	1 787.5
Total	2 717.1	3 142.5	3 116.5	3 169.9	3 210.7	3 189.6	3 149.2	3 142.1	3 170.9	3 218.7
Participation rate[b]	49.3	48.3	46.9	47.8	47.9	47.4	47.0	46.9	47.0	47.2
Men	1 789.8	2 075.2	2 034.6	2 025.9	2 040.5	2 020.6	1 991.2	1 982.2	1 999.4	2 025.4
Participation rate[b]			62.6	62.4	62.1	61.1	60.6	60.2	60.2	60.3
Women	927.3	1 067.3	1 081.9	1 144.0	1 170.2	1 169.0	1 158.0	1 159.9	1 171.5	1 193.3
Participation rate[b]			32.0	34.0	34.5	34.3	34.1	34.2	34.3	34.7
Swiss	2 271.8	2 355.8	2 395.5	2 511.3	2 523.7	2 487.2	2 461.5	2 449.8	2 463.7	2 482.6
Participation rate[b]			45.3	46.5	46.5	45.8	45.4	45.1	45.1	45.2
Foreigners	445.3	786.7	731.0	658.6	687.0	702.4	687.7	692.3	707.2	736.1
Participation rate[b]			55.0	55.8	56.3	56.8	56.9	57.5	58.1	58.8

a) Annual average including part-time employees.

b) Number of economically active persons (including the unemployed) as a percentage of the total population concerned. Foreign seasonal workers, foreign frontier workers, international civil servants and diplomats are not included either in the numerator or the denominator.

Source: Based on the 1975 edition of the *Nomenclature générale des activités économiques*.

Part Two

SUMMARY RECORD OF THE REVIEW MEETING

Paris, 23rd April 1990

In his opening address *Chairman Hummeluhr* emphasized the importance of the preparatory work for this, first-ever, review of Switzerland before the Education Committee, and called up on *Mr. Cavadini*, Head of the Swiss Delegation.

Introductory comments on the context of the review

Mr. Cavadini introduced the members of the Delegation and then began by recalling that Switzerland had for a long time been reluctant to accept even the principle of a review of its education policy by the OECD examiners. This reluctance had stemmed primarily from a conviction that it was always difficult to explain what was a relatively complex system. As the Examiners' Report quite rightly said, this system was "the fruit of history and of subtle compromises". However, in recent years in particular, there had been a growing realisation that such a review might be of value to Switzerland. The developments that were taking place in Europe, the strengthening of the Community and the need for dialogue between associations and individual countries were certainly not unconnected with this change in Switzerland's attitude. The Council of Europe and UNESCO conventions on higher education, which Switzerland was about to sign, had also persuaded the Swiss authorities to emphasize the need to make their system, or rather systems, of education better known.

Mr. Cavadini said that the Delegation was satisfied with the initial results of the review; it was now ready to address the questions that had been raised and explain the problems that had been referred to. Moreover, he felt sure that the outcome of these discussions would certainly influence Switzerland's future education policy.

He then listed the states, or cantons, which had been selected for this review from the 26 which made up the Swiss Confederation. Six had been chosen on the basis of a number of criteria:

i) The canton of Zurich, because it was one of the largest cantons in this small country, a university canton and deeply impregnated by its education system;

ii) The canton of Aargau, another large and heavily populated state, but without a university and therefore dependent on other education systems;

iii) At the other end of the scale, the canton of Uri, one of Switzerland's smallest states (33 800 inhabitants) with the special problems associated with the administration of a system within a canton of this type;

iv) The canton of Ticino, representing the Italian-speaking section of the country and ensuring the linguistic balance of this review;

v) The canton of Valais which, like two or three other Swiss cantons, is bilingual; and since its education system was undergoing radical change, it had seemed a good case to study;

vi) The canton of Neuchâtel, a small entirely French-speaking university canton with, here again, the particular problems that characterise the operation of such a system.

Mr. Cavadini then went on to say, "Is this a representative sample? We believe so, but it is necessarily incomplete, and this is the first point we should like to make: it under-represents the

German-speaking section of the Confederation. However, despite our wish to take a wide cross-section, we had to restrict ourselves and thus accept that subjectivity would be unavoidable. The Examiners' Report stresses this fact but, nonetheless, the questions posed and the problems raised are certainly those we consider needed to be".

Mr. Cavadini felt that, if there were any criticisms to be levelled at the report, these would be for example:

- A certain imbalance in the presentation of the problems of the cantons concerned;
- A perhaps overly critical or, at least, overly qualified assessment of the dual system;
- An occasionally incomplete understanding of Switzerland's direct democracy.

Before going on to an analysis of the report itself, Mr. Cavadini summarised the characteristics of Swiss federalism, particularly as regards its relationship to direct democracy. This federalism took account of disparities, inequalities and specific cultural characteristics through the fact that power was genuinely exercised at a decentralised level. The central government of the Confederation had no authority as regards the management of the systems of compulsory education. This was not a matter of devolved government but simply that of the autonomous exercise of political power by the cantons.

However, what could sometimes complicate the exercise of this power was the fact that any law — or part of a law — could at some time or another be subject to a referendum, to decide whether it should be accepted or rejected. In many cases this limited the power of cantonal governments. This system, manifestly, had its strengths and weaknesses. There were the following *five weaknesses*:

i) Numerous decision-making powers and bodies;
ii) The high cost involved, although it would be wrong to exaggerate the financial problem; however, in some cases, duplication by a number of different cantons could lead to multiplication of costs;
iii) Certain regional disparities, depending on whether a state had adequate or less adequate resources;
iv) Obstacles to mobility;
v) The acknowledged fact that the Swiss authorities were more accustomed to reacting than putting forward their own ideas.

On the other hand and very logically, there were at least *seven advantages*:

i) Adaptability to the real and immediate needs of the population of a canton;
ii) Rapid response by the actors in the education system;
iii) Rapid implementation of the decisions adopted;
iv) Closeness to the power base;
v) Personal involvement of actors and officials who are always citizens and taxpayers in these cantons;
vi) Conflicts overcome through the subtle use of compromise;
vii) Stimulation: a canton tries to have at least what the other cantons offer.

Mr. Cavadini went on to say, "While we ourselves are convinced that our education system is one of quality, we are happy to see that the report recognises this. However, what aspects of it can be improved?

First, we have a dichotomy, i.e. the excessive separation of academic education from vocational training. Secondly, our dual system, even though we may vaunt its merits, needs also to place more emphasis on the acquisition by apprentices of a good general culture. Thirdly, the selectivity of academic education may sometimes appear too restrictive (11 or 12 *maturité* sections). This is true, but we need, however, to place these statistics and international comparisons in a proper perspective. The percentage of *baccalauréats* (which we term federal *maturités*) is low in Switzerland: less than 15 per cent. But it cannot be said that the comparison is really meaningful, because the way such qualifications are defined differs so greatly from one country to another."

Mr. Cavadini felt that a fourth improvement was needed: with respect to the system of selection which, in Switzerland, was still too draconian and often too early.

In addition, he felt that better co-ordination was needed at the higher education level, that female potential was being inadequately drawn upon, that the policy of integrating the children of immigrants should be pursued, that the disparities between cantons were a fact and that, in the statistical area, there were still shortcomings.

Mr. Cavadini concluded his introductory statement by saying, "Perhaps we shall also have to abandon the idea that quality can be maintained only by maintaining the *status quo*. What is more, to our European neighbours we are announcing our genuine desire for stronger links. Our ambition is to "set our Swiss house in order" and the Examiners' Report will certainly help us to do this."

Mr. Silvestre introduced the examiners and asked those present to accept the excuses of *Mr. Knies* who, for personal reasons, was unable to attend. He commented briefly on the conditions in which the examiners had conducted their enquiry. First of all, he praised the high standard of the two volumes of the Background Report. Secondly, he stressed how warmly and well organised their reception had been, and, thirdly, how much the examiners had been encouraged by the unusual interest in educational problems and teaching practices that they had encountered among the persons they had met. Educational activities were highly professionalised, but this did not exclude the question — to which they would be returning — of how to make best use, in the context of an educational project, of the vast range of decentralised decision-making powers.

However, Mr. Silvestre was anxious to emphasize that, in this review, it had not been possible to study everything. What they had been obliged to omit were:

- The sector of the *Hautes Ecoles* and universities;
- Twenty of the 26 cantons, with only 6 being visited;
- Lifelong education; and
- The corporate sector's educational and training activities.

On the other hand, the examiners had considered it essential to address — even cursorily — the problems posed by non-university higher education.

Mr. Silvestre concluded by saying, "As the Examiners' Report shows, Switzerland's past history in the field of education and training is particularly rich and varied, and there are a number of questions that can be raised as regards the future thrusts of the policies and strategies to be applied. We have classified these questions into what seem to us to be the four key areas, which does not mean however that we are ignoring other essential aspects of Switzerland's education policy which may in fact have been raised in the body of the report. The four areas we have singled out for discussion within the OECD Education Committee are as follows:

1. The demand and supply of skills;
2. The way the education system functions;
3. Guidelines for Switzerland's education and training policy;
4. The formulation, implementation and monitoring of policies."

1. THE DEMAND AND SUPPLY OF SKILLS

For some time there has been evidence of a number of severe strains on Switzerland's labour market which have led to a shortage of manpower either at certain levels of skill or for the highly specialised skills required in some of the traditionally dynamic sectors of the Swiss economy. Given that predictions of the university student population would seem to be based solely on the forecast trend in social demand, the examiners would like to have the Swiss authorities' views on the following points:

Questions

1. *Does not Switzerland's integration within the European and world economy argue in favour of a regular long-range analysis of skilled manpower requirements to serve as a framework for a comparison with the forecast trends in social demand and the adjustments that need to be made in policies with regard to the supply of skills?*
2. *Do the Swiss authorities consider that the current potential of university and non-university higher education institutions is sufficient to meet the demand for skills at this level? Is there not a contradiction in opposing the idea of mass university education without systematically expanding non-university higher education of a more specifically vocational character? Are the necessary financial and teaching staff resources available for a more systematic expansion of the non-university sector? In particular, would the Confederation be prepared to increase its present modest contribution?*
3. *Do the Swiss authorities consider that there is a sufficient number of graduates from the various types of secondary education (including vocational) of the right standard to go on to the higher education institutions that are likely to be developed? Given that some categories of student are under-represented in the streams leading to higher education (e.g. girls, the children of immigrants and from disadvantaged social categories, children from the economically less advantaged cantons, etc.), what steps are the authorities concerned contemplating in order to increase the representation of these various categories in the streams corresponding to the type of skills needed to sustain Switzerland's social and economic dynamism?*
4. *What can be a key factor in helping to match manpower skills with the different and changing requirements of the economy is a policy of continuing vocational training within a larger framework of lifelong education. To date, the Swiss authorities would not appear to have formulated a systematic and coherent policy in this area, geared to the basic types of education and training. The geographic as well as the occupational mobility of labour can depend both on this type of continuing education and training, and on provision for the mutual recognition of qualifications where this does not already exist. In short, do the*

Swiss authorities intend developing continuing training programmes (and, if so, in what form) within the wider context of their as yet "underexploited reserves" of human resources? Are those cantons, whose rates of participation in the levels of skills needed now and in the future are considered inadequate, prepared to "invest" in these sectors? To do this, would they require help in the form of specific aid and, if so, of what kind?

5. *Matching the supply with the demand for skilled labour naturally means paying as much attention to the qualitative aspect of training as to the strictly quantitative aspect. Do the Swiss authorities consider that the training currently on offer at the different levels of skill corresponds closely to the expertise required in the light of the changing job specifications within the various occupational categories? What can be done to expand training for research and development at the higher education level by means of R&D within the various institutions? Are the plans for recruiting, training and retraining higher education staff, as well as the exchanges with industry at this level, considered to be sufficiently well developed to meet the future requirements of the economy and the need for new skills?*

Mr. Clement, speaking on behalf of the examiners, pointed out that the first question was of a technical nature and referred his audience to the Examiners' Report. He too praised the quality of the Background Report prepared by the Swiss authorities, but nonetheless voiced a number of criticisms with regard to the absence of an analytical approach and the weakness of the statistical apparatus in areas such as:

- demography,
- mobility both inside and outside the education system,
- labour market trends,
- trends within the teaching profession.

He emphasized the fact that, to his mind, statistics were not the same thing as planning but that, in the particular case of Switzerland, the slowness of certain decision-making processes was one reason for developing forecasting tools.

Mr. Clement drew attention to the need for analytical knowledge of the conditions governing the "power" of skilled labour in the light of its present and future context for development. This called for more accurate assessment of the demographic situation, of the skills requirements of business and industry, and of the interdependence between the education system and the labour market. In many cases, better knowledge in this area could lead to an improvement in the performance of the system as a whole.

Forecasting and long-range analyses

On the question of the lack of long-range analysis, *Mr. Natsch* recalled that fortunately, at the moment, the number of unemployed was running at between 0.5 and 0.6 per cent of the labour force and was not far off zero per cent in the case of youngsters between the ages of 16 (the end of compulsory schooling) and 25. However, there was no guarantee that this enviable situation would continue and the fact that a telecommunications firm had had to make 1 000 employees redundant and hire 300 engineers was a warning sign, and examples of this kind could rightly be considered as evidence of the importance of long-range analysis of the labour market.

Nonetheless, Mr. Natsch stressed the limitations of this type of analysis and the great difficulty in defining its parameters. A few years ago, it was being argued that soon there would no longer be any need for draughtsmen since their work would be performed by computers. A number of forecasts had turned out to be wrong a few years later and, in addition, many analyses of labour market requirements and trends had run into the problem of regional differences. This was why analyses of trends should increasingly be carried out at regional level rather than solely at national level. Since the parameters and premises of these analyses were different and debatable, their results were inevitably open to question. This made it all the more difficult to translate these results into policies.

For example, university students in Switzerland spent about twelve years in the "cocoon" (between the time when they had to decide what they would study at university and when they qualified) before entering employment. To have an analysis of labour market requirements spanning such a long period was virtually impossible. On the other hand, it might be possible to envisage a more flexible system, involving a shorter period of training, which would enable graduates to enter employment earlier and match their training on an ongoing basis to new requirements as these arose.

Mr. Natsch stressed, however, that these forecasts should not be allowed to restrict the free choice of education and training, and that the social demand should continue to take precedence. All that long-range analysis could do was to help an individual to choose his profession. It would give an employer prior warning of the need to adapt his staff training to the changes that were taking place in working life.

The training of highly skilled manpower

Mr. Trier said that the question of recruiting candidates from the upper secondary level for the higher education streams concerned not only the field of technology but also the service sector. Some groups (women, foreigners) were, in fact, under-represented in these, but substantial efforts had been made to overcome this. In the case of women, considerable progress had been achieved: currently about 50 per cent of *gymnasium* students were girls and the number of girls completing apprenticeship training (55 per cent) or a secondary school (24 per cent) was steadily growing.

The goal of increasing the proportion of highly qualified persons within the higher education sector should not rely solely on expanding the universities. What had to be borne in mind was the fact that Switzerland had a well-established system of vocational training; the emphasis should be on establishing closer links between vocational training and the higher education institutions.

With regard to the initial and further training of highly qualified personnel, *Mr. Poglia* said he would like to reply to the criticism about the lack of forecasting. The economy nowadays did in fact require skilled and highly skilled manpower: engineers and researchers in every field. While it was true that the Swiss education system had always had as its general principle that of responding first of all to the social demand of the students themselves and their parents, as far as high-level education was concerned (particularly university education), Switzerland did in fact have a system of university planning.

Switzerland possessed eight cantonal universities — 80 per cent at least of whose funding was provided by the cantons — and two polytechnics entirely funded by the Confederation. These ten schools together drew up a four-year plan. It was interesting to note that, although the decision-making power was vested in the government authorities, the institutions themselves played an essential role in establishing their objectives. However, the objectives for each university were not set completely separately from one another, but formed part of an overall system. There were forecasts, for example, with regard to demographic trends, social demand and, to some extent, the requirements of the economy for highly skilled manpower. It was for this reason that universities were being asked to take into account the likely increase in demand from students from the non-urbanised regions and that the question of responding more adequately to women's demands for technical and scientific training were being studied. Highly concrete proposals had been made for the creation and funding of research teams within universities in conjunction with business and industry so as to pave the way for the subsequent employment of graduates in these firms. This also applied in the case of continuing training.

Mr. Comby, speaking in his capacity as education minister for Valais, began by saying how valuable it was for the cantons to have the benefit of the comments and criticisms of experts with a view to improving their system of education and training. Turning to the question of skilled manpower, he made the following observations:

i) The school had to be more in touch with the outside world and adjust to changes more swiftly; unquestionably there was an effort that needed to be made in this respect;
ii) The measures to be taken should not be confined to higher education; the general level and quality of education and training had to be raised, including of basic education;
iii) Any improvement in the conditions and quality of life would depend not only on the knowledge that individuals acquired but also on their value as persons;
iv) The school needed to inculcate new skills such as the ability to adapt, to solve problems, to cope with complex situations and to communicate clearly;
v) Continuing education and training would become increasingly important in the future.

To illustrate his comments about the need to find new solutions, Mr. Comby quoted the example of the creation of higher vocational training schools in Valais. In this canton, within the space of a few years, several higher vocational schools had been set up: the Swiss tourism school, an engineering school, a cantonal computer science school and schools of higher education for business and administration. Under the federal system, local and regional authorities were able to take such initiatives whilst at the same time receiving support from the Confederation.

The *Delegate for Italy* raised the question of post-secondary education, its present situation and future prospects.

In reply, *Mr. Cavadini* said that this was a matter of genuine concern. There was a very substantial lack of skilled manpower, engineers in particular. Switzerland turned out some 3 300 engineering graduates a year from its higher technical schools and federal polytechnics. Since the need was constantly growing, this meant that only 50 per cent of the demand could be satisfied and every effort was being made to reduce this shortfall.

The role of foreign manpower

The *Delegate for France* said that the examiners had overlooked one canton, i.e. "the canton of France", given that, in the form of its "frontier workers", the French education system was supplying Switzerland with skilled workers. His question was: what contribution was the French education system making to the operation of the Swiss economy?

Mr. Cavadini, acknowledging the importance of the French Delegate's question, pointed out that, 60 years ago, the situation was the reverse: France had been importing Swiss manpower.

Mr. Natsch replied in greater detail to this question, saying that a good number of French nationals crossed into Switzerland every day to work and that one of the consequences of this situation was that these workers brought their children with them when they were old enough to enter an apprenticeship in Switzerland. This training followed the pattern of Swiss occupational training, leading to an examination at the end of their course. Those who were successful — virtually all of them — were awarded the federal certificate of proficiency.

But there was still a problem in this respect: these young foreigners, who had obtained a Swiss federal proficiency certificate, were treated as unskilled workers when they returned to their own country (particularly in the case of France) because the qualification was not recognised by their home country's authorities. Accordingly, they had little choice but to continue to work in Switzerland where they were considered as skilled workers and where they were welcome, particularly in the present economic situation. Even though Switzerland was not a member of the European Community, it was in everyone's interest that these Swiss qualifications should be recognised in these youngsters' country of origin, since this was the only way of coupling their employment with the possibility of returning to their homeland.

Mr. Cavadini added that, besides France, Switzerland had similar relations with Germany, Austria and Italy, many of whose nationals came to work in Switzerland. These 150 000 workers represented a supply of manpower which was of benefit to Switzerland. This, coupled with the influx of immigrant workers, particularly from Portugal and Spain, helped create the fortunate situation that the country currently enjoyed, although well aware of its limitations and shortcomings.

Concluding the discussions on the first set of questions, *Mr. Clement* emphasized that it was not up to the examiners to advocate a particular form of educational planning, but drew attention to the fact that human resources were the scarce factor, and the pattern in this respect needed to be known. The worldwide situation was changing and the strategies for the future had to take human resources into account: Japan was a classic example in this regard.

2. THE WAY THE EDUCATION SYSTEM FUNCTIONS

Education and training in Switzerland would still appear to be compartmentalised in terms of their structures and methods of operation. In particular it is noticeable that there is very little exchange between general education and vocational education, which for the most part takes the form of alternate classroom/on-the-job instruction (dual system). This situation is reflected in the structure and composition of the teaching staff.

Questions

6. *Although the situation differs widely from canton to canton, Switzerland's system tends generally to involve the streaming of students at a relatively early stage into fairly watertight channels of secondary education. Several cantons have, however, set up post-primary information and orientation systems which attempt to reconcile the needs for both training and selection. Do the Swiss authorities consider that the present methods of choosing streams at the end of primary education meet the needs of both the students and society as a whole? Does not the upward expansion of the education system call for a postponement of this unduly early selection process? Does ensuring that more students enrol for more demanding streams or curricula imply revised methods as well as content? In what ways? Should not the extremely valuable support activities used largely at the primary level be introduced systematically at this first-cycle secondary level?*

7. *Gymnasium studies would seem to dominate the rest of education to a very great extent. Given that gymnasium education at the moment concerns only a fairly small percentage of any given age group, except in a few cantons, does it not have a disproportionate influence — in some cases even as early as the primary level? Is it possible to imagine gymnasium education as fulfilling primarily the general requirements of what might be termed secondary education rather than the more specific requirements of higher university education? Does not the lack of multidisciplinarity of the curricula have negative repercussions on the content and methods of gymnasium education? Is there not a need to allow more students access to a reformed system of gymnasium education in order to provide candidates for other types of non-university higher education? If this option is ruled out, are there any plans to create a separate form of general second-cycle secondary education of a good standard as an alternative to a reformed and more accessible gymnasium? Is it considered that the development of diploma-level schools meets this need in terms of both quality and quantity? The stalemate as regards the reform of gymnasium curricula is sometimes blamed on the lack of flexibility of the* Ordonnance fédérale sur la reconnaissance des maturités *(ORM). Does the ORM allow real and systematically evaluated experiments to be carried out? What new elements need to be incorporated in the ORM so that it enables the maturité to be regularly updated in line with changes in the various requirements for training? In order to promote access to higher technical training for students involved in the dual system, is there any plan to create a "technical maturité" as a qualification of an equivalent standard?*
8. *For an education system to function coherently there needs to be a minimum of co-ordination, linkage and dialogue between the different levels and types of education. It would seem that not even the professional training and organisation of the teaching body help to counteract the quite pronounced segmentation between levels and types of education and training in Switzerland. It would appear too that the interest of teachers in direct counselling activities is not very developed or that there is insufficient follow-up from one level or type of education to another. What measures are the authorities concerned contemplating in order to provide a firmer basis for integrating the different components of the system, including within the main subsets, i.e. compulsory education/non-compulsory education; general education/vocational education; first-cycle/second-cycle secondary education, etc.?*
9. *Is the teaching profession in Switzerland, by virtue of its terms and conditions of service, its training and its functions, able to cope with the need for decompartmentalisation and adjustment that has been referred to on several occasions? For example, are there any plans for common training modules, alternate spells in industry, in vocational and general education, initiation in the activities of educational research and development, etc.? Is it felt that the teaching profession's present terms and conditions of service are sufficiently flexible to allow the requisite adjustments? Do the systems of training match requirements? For example, is it intended to position the training of primary school teachers at the higher education level and to combine part of their training with that of their future colleagues in first-cycle secondary education so that compulsory education should be more closely integrated? Many cantons consider that the training of second-cycle secondary teachers is not adequate. What are the difficulties that need to be overcome? Are not teachers' university studies already unduly long? Are there sufficient high-grade teacher trainers? The adaptability of the teaching profession also depends on continuing training. Such training still seems to be provided in the traditional form of individual courses. Should not other predominantly group and local forms of training be provided? In view of the ageing of the teaching profession in Switzerland, are there any plans to ensure that*

its dynamism is maintained by means of regular programmes of in-service training, partly compulsory, organised at national and intercantonal level and in fields that are highly specialised or of interest to only a small segment of the profession? Lastly, there are obstacles to the intercantonal mobility of teachers because of the rules governing their training and their terms and conditions of service. In order to match teacher supply and demand more closely, including from a geographical standpoint, is it intended to move towards the mutual recognition of teaching qualifications and a closer alignment of terms of service, whereby the most important aspects of these would be easily transferable from one area to another?

Mr. Silvestre, pointing out that this main set of questions concerned the way the education system functioned, began with a comment on the apparent compartmentalisation of the system of education and training. He mentioned the experiments to improve its fluidity and asked what the Swiss Delegation thought of these. He had noted a generally very rigid streaming between the primary and secondary levels. He had also noted wide differences from one region to another between the various lower secondary cycles: in some cantons the compartmentalisation was very marked whereas, in others, the *cycles d'orientation* were used more "constructively" and more actively. He wondered whether these *cycles d'orientation* would be extended.

Another question was the extent of the flow between the dual system and the system of technical training. His feeling was that this flow was still not satisfactory.

He also made the point that gymnasium education, while it might be of small importance quantitatively speaking, had a considerable impact from a qualitative standpoint. What was the situation as regards the intermediate schools? Was a structured educational environment taking shape around the diploma-level schools?

The functioning of the system as a whole

Mr. Arnet considered that the examiners were right in emphasizing the fact that the structures and channels of general education and vocational training gave the impression of being two separate worlds. However, one should not forget that the decentralised system was, by and large, extremely adaptable. And he added, "We prefer an education system lacking in co-ordination but dynamic to one that is co-ordinated but directed solely from above!".

He said that there were fewer problems in practice than there were in theory: lines of communication were short and officials at all levels, in most cases, knew one another personally.

In reply to the question whether the streaming of students for the lower secondary level took place at too early a stage and whether these streams were not too watertight, Mr. Arnet said that these matters had indeed been the subject of debate in Switzerland for many years. Some cantons had already come up with a number of new solutions and other possibilities were being investigated elsewhere. Overall, the tendency was clearly towards a better orientation of students. However, there were three aspects of this question that needed to be borne in mind:

i) Essentially, this selection process, in the sense of a definitive choice of an educational stream, occurred after the lower secondary level. It was then that youngsters had to decide whether they wanted vocational training within the dual system (65-70 per cent of them) or full-time attendance at a school (25 per cent of them);

ii) The various reforms introduced at lower secondary level meant that every student had a comparatively wide choice of vocational education;

iii) It was important to emphasize how open access to an occupation was in Switzerland.

The place occupied by the gymnasium in Switzerland had been largely the result of historical factors. It still had the monopoly as regards access to universities. As the examiners rightly pointed out, the idea of an elitist and scientific knowledge-oriented gymnasium was equivalent to the idea of a *haute école* with a number of very different faculties.

There were two major arguments against a broadening of gymnasium education:

- This would detract to some extent from vocational education;
- Switzerland had university cantons and non-university cantons. Gymnasiums, being uniformly selective and imposing the same high standards, meant that students throughout Switzerland had equal access to universities.

The diploma-level schools provided, in fact, a "middle solution". However, they covered only a limited range of occupations.

Lastly, there was the question of a reform of the *Ordonnance fédérale sur la reconnaissance des maturités* (ORM). What was being sought was a reduction in the number of subject matters, a transdisciplinary education and a reduction in the number of different types of *maturité*. From a Swiss point of view, the examiners' proposal to create a "technical maturité" had little chance of being adopted. The universities, which considered themselves to be neither vocational schools nor technical schools but "transmitters of knowledge", were not ready for this. Transition from one cycle or type of education to another

Transition from one cycle or type of education to another

Mr. Comby commented that the examiners, and Mr. Silvestre in particular, had rightly emphasized the problem of the transition between primary and first-cycle secondary education. In order to ease this transition, a new *cycle d'orientation* had been introduced in the canton of Valais and elsewhere. In addition, as far as gymnasium education was concerned, new colleges and new gymnasiums had been set up precisely in order to increase the number of gymnasium students. The lower secondary level was still a key component in the process of educating the younger generation and, in this connection, Mr. Comby thought that there were four fundamental principles that should be highlighted:

i) Respect for the concept of equality of opportunity and the democratisation of access to academic and vocational streams, while postponing this choice until as late as possible;
ii) The progressive streaming of students during their last year of compulsory education and offering them the widest possible range of opportunities by means of suitably designed educational structures, suitable curricula and differentiated instruction;
iii) Due regard for the development of the child and time allocation; in this respect, educational support was an important way of fostering the development of all of a child's potential. There was certainly a need to provide more of such support so as to be able properly to implement this "differentiated instruction";
iv) Increased participation by parents, particularly in the case of certain decisions concerning their child's future.

In short, Mr. Comby admitted that, in Switzerland, streaming generally occurred at too early a stage, but that the present tendency was to delay it.

Mr. Erba pointed out that, in Switzerland, the situation as regards secondary I differed widely: there were 18 cantons with a 3-year programme following 6 years of primary schooling; 4 cantons with a 4-year programme and another 4 cantons with a 5-year programme. The tendency was towards a co-operative approach with fewer sections (2 or 3), crossovers, streamed classes, etc. Among the different models was that of the *scuola media* in the canton of Ticino, a secondary school with a 4-year programme based on the following principles:

- to promote the democratisation of education;
- to enable children of any socio-economic category to undertake longer courses of study;
- to delay the moment of decision regarding secondary II.

With this structure, following the *scuola media* (10th year of schooling) 28 per cent of students went on to schools, 5 per cent to diploma-level schools, 11 per cent to full-time vocational schools and 57 per cent to apprenticeship training. Mr. Erba stated that, in Switzerland's situation, the experience of the different cantons could be a source of ideas for the others. The structure of secondary I in Valais and in the Jura, for example, had been based on Ticino's *scuola media*.

Mr. Natsch admitted that the question of the junction or, to be more precise, the transition between one level and another was a frequent subject of discussion. The problem of entry to an engineering school for someone with a basic training in a technical occupation also arose in the case of those with a basic commercial training who wished to enrol in a school of higher education for business and administration (ESCEA). The view in Switzerland was that the professional experience acquired during three or four years of training was an advantage for all those entering an engineering school. As a general rule, a third-year apprentice, particularly a gifted one, was capable of performing the work of a qualified professional and therefore had a considerable advantage vis-à-vis the student who could only lay claim to his academic, i.e. theoretical, knowledge. However, what should not be lost sight of was the fact that, in view of the constant increase in the number and complexity of the subject matters that had to be assimilated at an engineering school, the ex-apprentice's theoretical grounding would not necessarily be sufficient for him to be able to complete an engineering training successfully in three years. Mr. Natsch mentioned two possible ways of solving this problem:

i) To increase the period of training for engineers by introducing an initial preparatory year. However, this did not seem to be a very satisfactory solution, given that courses were already considered to be too long in most cases;

ii) To encourage gifted apprentices of either sex to undertake additional advanced courses of instruction of a general as well as a theoretical nature; the Swiss authorities preferred this solution since the would-be student would have the advantage of already possessing not only a basic practical training but also a more extensive general education. The engineering course could then be completed in three or, if need be, three and a half years.

Mr. Cavadini said that the movement to postpone the streaming process had been gaining support over the last ten years in every canton. However, each canton was free to decide the pace and nature of its reforms but, for the most part, there was bound to be an extension of *cycles d'orientation* within the Swiss education system. With regard to the transition between secondary I and the vocational cycle, Mr. Cavadini pointed out that this was a problem common to all systems in all OECD Member countries. It meant moving from a specifically academic environment to the world of work The way the Swiss approached this problem could well differ substantially from one canton to another. A simple illustration of this was the fact that, while in most cantons the education authorities were responsible for providing vocational and occupational information, in a substantial minority it was the Department of Economic Affairs. As to whether gymnasium education contributed to an unduly rigid compartmentalisation and an overly strict selection process, Switzerland's aim had been to ensure that *maturité* graduates would have general and unrestricted access to a university. Admittedly, *maturité* graduates numbered less than 15 per cent in any given age group, but possession of this qualification meant free access, so to speak, to a university without any other examination. This obviously raised what was undeniably

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a serious problem. The tendency now was for the number of graduates to increase and, over the next ten years, the figure should rise to about 20 per cent of the students completing their studies in a particular year.

The role of the dual system

The *Delegate for Germany* said he was very satisfied with Mr. Arnet's reply on the functioning of gymnasiums. Similar questions were being asked in Germany where the gymnasium was less selective, but selection was a positive way of setting each student on the right path.

The *Delegate for Denmark* wondered whether there was any link between early selection and the shortage of skilled manpower. If there were, then there would be two solutions: either to change the system or to import labour. He wondered what parents' attitude was to this selection process and noted that only in the case of the university was there free access.

The *Delegate for France* asked what the reasons were for the increasing popularity of a tenth year of schooling after compulsory education. He also wondered whether the dual system was capable of responding to the demand for raising the standard of education of the labour force and improving its ability to adapt.

The *Delegate for Belgium* raised the question of whether, in Switzerland, apprenticeship was considered more efficient than schooling; did this not conflict with the plan to increase enrolment in gymnasiums?

Mr. Clement took the opportunity provided by the French Delegate's question to state his views on the specific nature and merits of the dual system as practised in Switzerland. To start with, he considered that the educational value of enterprise-based training should by no means be underestimated. The new skills, as well as the general enhancement of the standard of education, that were necessary in order to respond to technological development could very well be acquired through the traditional Swiss system of vocational training, which had already demonstrated its adaptability. A good example of this was the creation of "introductory courses" to reinforce the apprentice's all-round training, which was turning the dual system into a "triple" system and giving the Swiss system a degree of originality compared with the German and Austrian systems. In his view, what perhaps needed to be emphasized, more than it had been in the Examiners' Report, was the idea that more schooling did not necessarily lead to an improvement in the standard of education and training. The new developments in the apprenticeship system that were already taking place in some major Swiss firms were certain to encourage continuing and/or higher occupational training.

In reply to the Danish Delegate's question on the manpower structure in Switzerland, *Mr. Cavadini* recalled first of all what had already been highlighted by the examiners, namely Switzerland's demographic situation. This explained to a large extent the country's dependence on foreigners in the fields of economics and research and development. For example, there was a higher proportion of foreigners among the university professors and researchers than there were among the population as a whole, where the figure was roughly 16 per cent. Early streaming would not appear to be a reason for the shortage of manpower. Nonetheless, a change in educational structures could lead to a change in the manpower structure. When the parameters for the federal *maturité* were revised, for instance, the number of medical students had risen very sharply, simply as a result of broadening access to include those who had a *maturité* certificate but without Latin. In this case, therefore, allowing more students access to a particular type of training had led to a substantial change in the manpower structure, but an unduly early choice of stream did not seem to have been the fundamental reason for this.

Replying to the Representative of Germany, who had underlined the quite striking similarities between the two federal countries in terms of vocational training, Mr. Cavadini said that he was convinced that each country would benefit greatly from a better knowledge of the other. To the question from the Delegate for France on the reasons for a tenth year of schooling, he said that Switzerland was, in fact, seeing more students staying on for a tenth year after their nine years of compulsory education. One of the reasons for this was that students were waiting before making a decision, but the movement was more general than this and, in fact, more than three out of four Swiss students spent at least twelve years in education, including in the vocational system. As to the question of whether the dual system was capable of meeting the need to raise the general standard of the population as a whole and its ability to adapt, Mr. Cavadini shared the very positive views expressed earlier by Mr. Clement; replying to the Delegate for Belgium, he pointed out that the apprenticeship system was not a barrier to further training, quite the contrary: the proportion of holders of a federal proficiency certificate who were able to continue their training was substantial.

Teacher training and mobility

Mr. Laeng introduced the questions on the training and status of teachers. He noted that the system of training differed widely from canton to canton and raised the following main questions:

- *i)* Could the systems of training be harmonized, for example in the case of primary school teachers?
- *ii)* Was there not a need to develop training courses for primary school teachers at the higher education level? Is it not likely that a more homogeneous system of training would facilitate teacher mobility?

Replying to Mr. Laeng's first question, *Mr. Kramer* said that Switzerland was aware that the basic training of teachers, in its present form, was too "academic" and that there was too little interaction with the world of work. Switzerland's Conference of Cantonal Directors of Education (CDIP) and the cantons were currently considering a series of concrete measures in this respect. Some cantons were planning closer interaction between the different teacher training cycles and/or the defining of common basic elements. In any case, the guidelines regarding contents would continue to be drawn up at national level; it would then be up to the cantons to apply them.

In reply to the second question, Mr. Kramer said that there was a move within the cantons towards providing better training for all teachers in the compulsory sector. However, in some cantons the training of both male and female teachers for the compulsory and kindergarten levels was not provided by a university but by a teacher training college (secondary II level). Nonetheless, this did not mean that the educational content was not harmonized, in terms both of its quality and its objectives, regardless of whether this training was provided by a university or by a teacher training college.

The criticism of teacher training contained in the Examiners' Report was to a large extent justified. The CDIP had embarked upon discussions with regard to a long-range analysis of "The training of secondary II level teachers" which dealt with the problems referred to in the question, namely:

- *i)* the shortening of this training;
- *ii)* the removal of specialisation;
- *iii)* the broadening of access to this training;
- *iv)* the improvement of the trainers' training, etc.

The criticism regarding the continuing training of teachers was also justified. The CDIP was currently working on a project entitled "The continuing training of tomorrow's teachers". The working party's remit was to analyse the experience of the past twenty years and to propose new aims and new forms of training. The CDIP shortly should also be issuing recommendations regarding the mutual recognition of teaching qualifications. At the moment there were still three or four cantons that had legal provisions preventing such recognition.

On the other hand, mobility did not go hand in hand with the equality of teachers as regards their terms of service. Each canton drew up its own conditions for the recruitment and remuneration of teachers, depending on its financial resources. Even if all the legal constraints on mobility were to be removed, it would not necessarily come about since teachers had very strong ties with their region.

Mr. Cavadini added that, despite the substantial difference in salaries between cantons, there was not a great deal of mobility within the teaching profession. However, Switzerland could not continue to be the odd man out; it had to make its education and training more homogeneous and encourage the mobility of its teachers.

Mr. Schmid also addressed himself to the comments made by Mr. Laeng. He explained how teacher training was organised in the canton of Aargau, saying that, "We have, in fact, introduced a number of reforms in this area which may be of interest not only for Switzerland as a whole but also for other European countries. In the first place, as regards the initial training for teachers in the compulsory sector, we have introduced a clear separation between general education (leading to a *maturité*) and specific professional training for which a teacher training centre has been set up. In this way we have been able to overcome the previous shortage of trained teachers for our district schools (the most demanding secondary I stream). In addition to the usual specialised and scientific training they receive at the university, the future teachers for these secondary schools have to attend the *Didaktikum* where they are given a year's course of teacher training and training in specialised teaching techniques. This system can be considered as foreshadowing the subsequent system for training secondary II teachers".

Mr. Natsch referred to the examiners' concern about the possible lack of teaching ability of persons working in business or industry (employers or employees) who, in addition to their professional activities, gave a few hours of instruction in a vocational school. He did not share their doubts and was convinced that the coexistence in vocational schools of tenured and "auxiliary" teachers was an asset and — as other speakers had pointed out — tended to create a certain degree of permeability between the world of work and the world of education. These auxiliary teachers brought with them the know-how they had acquired through their experience and, being in direct contact with the world of education, they were in a better position to draw the attention of business and industry to the problems facing schools. In his view it was not a necessary evil but a definite advantage.

In reply to a specific question from *Mr. Papadopoulos* (Deputy Director for Education) on the methods used to ensure the quality of these auxiliary teachers, *Mr. Natsch* said that there was no system that could guarantee the quality of the instruction. However, he cited a number of measures that could be used, such as the wide range of refresher courses that were available for teachers in vocational schools and the encouragement that was given, despite certain obstacles, to the recruitment of teachers as examiners for the final apprenticeship examinations. The idea was that by getting them to share in the responsibility for evaluating the results of the training, this would increase their motivation. An auxiliary teacher who proved to be unsatisfactory could be dismissed at the end of a semester whereas, in the case of tenured teachers, this raised a number of problems that many countries other than Switzerland had to contend with. These auxiliary teachers were specialists and experienced in their field; what was more, they were given in-service teacher training, admittedly rather succinct, but they were encouraged to take the refresher courses organised by the Confederation. In short, Mr. Natsch thought it was true to say that the majority of these auxiliary teachers achieved as good results as the tenured teachers.

Mr. Clement returned to the question of teacher mobility which, in the Canton of Neuchâtel for example, was very limited. It seemed to him that there were a number of major linguistic barriers to mobility.

The *Delegate for Belgium* asked whether teaching was still an attractive profession in Switzerland, while the Delegate for Italy raised the question of the conditions of service for present members of the profession. What was the situation, for example, as regards the supply and demand? Were their present terms and conditions of service considered to be sufficiently flexible to allow intercantonal mobility?

Mr. Cavadini, replying to Mr. Clement, said that it was true that the number of teachers transferring from one canton to another was very small. However, salaries could vary considerably from one canton to another, from the equivalent of FF 300 000 a year in one case to FF 500 000 a year in another. Nonetheless, there was no exodus from the poorer to the wealthier cantons; habits certainly had a powerful influence and language was still a fairly serious obstacle. Nonetheless, mobility needed to be encouraged and, very shortly, the cantons would be asked to vote on a procedure for the mutual recognition of the various teaching qualifications.

Mr. Comby added a comment on the subject of occupational mobility by quoting a specific example: it had been noticed that, in his canton, the profession of primary school teacher had lost some of its attraction in recent years because of a number of shortcomings in the initial training. It was therefore decided to carry out a reform aimed at improving occupational mobility and the studies conducted by Switzerland's Conference of Cantonal Directors of Education provided a very useful basis, enabling cantons to make substantial improvements in the initial and continuing training of their teachers.

Replying to the question on the attractiveness of the teaching profession, *Mr. Cavadini* said that that depended very much on general economic conditions. There had been times when the profession had seemed very attractive because economic conditions were difficult; in such circumstances, government employment looked very appealing. Now, the economic situation was such that the opportunities available in the private sector were extremely tempting. The following example was a good illustration of this: at the time of the economic crisis, some ten years ago, for a vacant post of head of a technical school in a tiny town of 10 000 inhabitants there had been 40 applications, 22 from persons with doctorates in physics and chemistry; nowadays, it was very hard to find a sufficient number of properly qualified candidates for the post of head of an advanced technical school!

Mr. Laeng expressed his satisfaction with the replies on the subject of teacher motivation and mobility. He hoped that Switzerland would be able to overcome the differences in "training paths" that characterised this profession. The details that had been given regarding auxiliary teachers were extremely interesting, particularly as regards the emphasis placed on practical experience. He wondered, however, whether sufficient weight was being given to training in teaching techniques and educational psychology.

3. GUIDELINES FOR SWITZERLAND'S EDUCATION AND TRAINING POLICY

The examiners on several occasions have emphasized the fact that both the internal development of Swiss society and its integration within the European and world economy would require a closer co-ordination of the education and training policies currently being applied by the cantons. This would mean that their policies would form part of a more coherent whole embodying a minimum of objectives to be achieved, perhaps by different ways and means in accordance with the "federalist style of management" of education.

Questions

10. *So far, the Concordat between the cantons has contained a list of actions to be carried out and a series of recommendations to be followed in order that the education systems should progress along more or less similar lines. After twenty years of operation, do the Swiss authorities consider that the Concordat provides the cantons with a good instrument for joint action? Is there any intention to amend the specific references to policies that have to be subject to joint orientations and decisions? In particular, can the Concordat serve as one of the instruments for formulating and implementing new national guidelines?*

11. *Do the Swiss authorities concerned regard the suggestion of establishing, at regular intervals, national guidelines for education and training as a valid response to the various challenges that Swiss education has to confront? Do these authorities consider that henceforth the concepts of "long-range planning" and "warning systems", which already exist in other sectors of society, should have a place in the management of education and training systems?*

12. *Guidelines that would serve as the basis for programmes for the development and adaptation of education and training systems over the short, medium and long term presuppose regularly updated information on the state of the system and its performance. This calls for a sound quantitative and qualitative data base compiled from statistical sources and from research and development and evaluative research conducted along lines agreed upon by all the partners concerned. The current situation as regards statistics, educational research and consequently global analytical studies leaves much to be desired. What measures are all of the Swiss authorities concerned intending to take to improve the entire range of statistical data available on the system? What new resources (human and material) need to be allocated to this task without delay? Are the Swiss authorities in agreement with the examiners' point of view that the activity of existing institutions such as CESDOC and CSRE should be expanded to include the compiling of regular assessments of the system in conjunction with OFS and the cantons' statistical services? Are the authorities concerned worried about the remoteness of these agencies from Berne?*

    In view of the relative weakness and current piecemeal character of educational research and development, do the Swiss authorities consider that a National Council for Research and Development in Education and Training should be set up?

13. *In short, what would be the major areas of policy and strategy which the Swiss authorities consider would have to be covered by guidelines of a national character on which the specific and practical action of the cantons would be aligned? In the context of a wider opening towards Europe, what particular measures could be taken to reinforce cohesion between the cantons and also federally, in the event of possible centrifugal trends in those cantons having borders with large neighbouring countries?*

In *Mr. Laeng*'s view, the central issue was the harmonization and coherence of the system as a whole. The recognition of qualifications throughout Europe, for example, presupposed harmonization within each country. In addition, there was the Concordat which could be developed and improved.

He then mentioned the possibility of establishing guidelines defining the main thrusts for innovation. He also suggested the possibility of strengthening the structures that would be responsible for co-ordination and planning. In particular, he asked the Swiss Delegation what they thought about the idea of setting up a council for research and education. Was there already an agency that could perform such a function?

The evolution of the Concordat

Mr. Schmid pointed out that Switzerland's education system was characterised by the principle of federalism, whereby each individual canton was all powerful as regards compulsory education. However, within the cantons, this federalism was not only subservient to, but in some ways further accentuated by, the system of direct democracy. In a political situation of this kind, co-ordination was possible only if, on the one hand, the cantonal governments agreed on a "minimum programme" and, on the other, if the population voted in favour of this. This was why the Concordat had had to be confined to a minimum programme (age of enrolment, duration of schooling, start of the school year).

However, one of the advantages of having 26 different school systems was that innovations introduced in one or other canton could serve as a model or testing ground for the others. In this sense, an extension of the Concordat was conceivable. For example, harmonization of secondary II was under consideration, mobility was becoming a reality through the recognition of teaching qualifications and the alignment of scolarship systems was continuing.

What is more, the Concordat had provided a stimulus. One outcome, for example, had been that the cantons had reached some measure of agreement on the question of the stage at which the selection process should begin. Another outcome had been that the cantons had got together to define the objectives of education. What should also not be overlooked was the development of common teaching approaches and the organisation of in-service training for teachers.

In short, despite the limited content of the Concordat, it could be said that some relatively important steps had already been taken in the direction of harmonization between the cantons.

Mr. Comby began by quoting as an example of co-operative federalism the agreement on university funding (between non-university and university cantons) whereby all students, wherever they came from, had access to the universities.

As far as the Concordat itself was concerned, he considered that, in twenty years of operation, this agreement on educational co-ordination had demonstrated not only its strengths but also its weaknesses, an example of the latter being the question of the start of the school year — what might have been thought a minor problem, but for which a national referendum had been necessary in order to achieve agreement on autumn as the starting date. A new dimension was the approach of 1993 in Europe, which made a review of the Concordat even more essential. Without calling into question the federalist system and cantonal autonomy as regards education, closer co-ordination in a number of areas was absolutely vital. For example, the Concordat ought also to cover:

i) other levels of instruction in addition to compulsory education;
ii) the question already mentioned of cross-cantonal recognition of teaching qualifications so as to promote occupational mobility;
iii) the harmonization of educational requirements with a view to future Europe-wide recognition of qualifications;
iv) the alignment of scolarship systems between the different cantons.

Mr. Cavadini concluded, "The Concordat is a necessity because, since the Constitution does not allow it, we cannot enact a national law. As Mr. Schmid said earlier, no article of the federal Constitution gives the Confederation powers as regards compulsory education, hence the inability to legislate in this matter and thus the need to find a third way, namely the Concordat which, as we know, has its limitations".

Guidelines

Recalling that Mr. Laeng had suggested the compiling of a regular report on the "state of the educational and pedagogical union", *Mr. Cavadini* said, "This is an operation we have never considered undertaking because, as you have seen, the differences and disparities in status and situation would make such a report rather dangerous from a policy-making standpoint, because it would be already out of date before it was even printed. This type of review procedure, moreover, is somewhat alien to our way of doing things, but we will bear this suggestion in mind and make sure that it is brought to the attention of all of the cantons to see whether they would like to have this 'mirror' held up to what they are doing in the sphere of education".

Better statistical data

As far as the question of statistics was concerned, *Mr. Gilomen* recalled that on several occasions the Examiners' Report had drawn attention to serious gaps and shortcomings in Switzerland's statistics on education. By and large, the Swiss authorities shared this opinion and acknowledged that education statistics in Switzerland, in their present form, did not entirely meet present-day requirements from the standpoints of planning, evaluation and international comparison. The Swiss authorities were therefore prepared to examine carefully suggestions for improving them and to make any necessary changes.

Mr. Gilomen then said he would like to make a number of specific comments regarding the current quality of Switzerland's education statistics and the prospects of improvements in this respect:

i) The shortcomings and gaps in education statistics were by no means an isolated phenomenon but reflected the general state of statistics in Switzerland. The situation in other important areas of economic, demographic, social and land-use planning statistics was also unsatisfactory and substantial investment would be required over the next few years if these were to be brought up to the standard of the statistical systems in other European countries;

ii) Nonetheless, despite their shortcomings, the data available in the education field provided some important information on a number of major issues that were of concern to Swiss society. For example, taking the main aggregates — the statistics on pupils and students, on the university system, the albeit incomplete data on examinations and qualifications, and the broad figures on teachers, institutions and public funding — in combination with statistical information on other fields, it was possible to compile pertinent indicators or reliable estimates of the key aspects as regards the structure and development of the education system;

iii) The Federal Statistical Office, aware of the need to update the system, had recently taken a number of different steps to improve the situation:

- Statistical data on teachers were currently being compiled.
- An improvement and general revision of statistics on employment and the labour force was underway.
- Preparations were being made for a special representative survey on training in relation to industrial activity and continuing training.
- Pilot tests were being carried out with a view to conducting a regular survey of Swiss males aged 20.
- Lastly, mention should be made of Switzerland's involvement in the CERI (OECD) project on international educational indicators. It was Switzerland's firm intention both to continue and expand its participation in this project and thus carry out the necessary work as regards the development of indicators in the country.

Mr. Gilomen said that, in pursuing these activities, three guiding principles would be followed:

a) The policy-making requirement: the needs of policy-making bodies and other social actors would be an essential criterion for the development of any statistical activity;

b) Co-operation between the Confederation and the cantons: given the particular characteristics of Swiss federalism and the decentralisation of powers, the division of responsibilities in developing new statistical data would need to be carefully considered on a case-by-case basis. The harmonization of activities in the statistical field in Switzerland did not simply mean the participation of cantonal services in surveys and the collecting of information or the use by federal agencies of data already in the possession of the cantonal administrations, but also the incorporation of the requirements of the cantonal policy-making authorities during the planning phase of any co-ordinated statistical activity;

c) Co-ordination and research: given that a purely quantitative approach would provide only partial answers to the problems of modern society, an essential and permanent concern of the Federal Statistical Office was to seek agreement and harmonization with other producers of empirical data.

The situation as regards educational research

On the subject of Switzerland's policy as regards educational research, *Mr. Hutmacher* offered the following comments:

i) Compared with the volume of public expenditure on education and considering the acknowledged strategic importance of developing initial and continuing education and training with a view to maintaining scientific, technological and economic competitiveness, educational research was very underdeveloped in most industrialised countries;

ii) There were many reasons for this underdevelopment of education sciences: the expectations as regards these young and "soft" sciences were often geared to those relating to natural sciences, whereas the application of the findings of educational research to the various areas of educational practice (teaching, administration, policy-making, etc.) posed highly complex problems;

iii) But perhaps there was also the question of the nature of the "desire to know" that existed at the different levels of the education and training systems. Underlying the increased use of research there was always an admission of ignorance of one kind or another, the acknowledgement that, in a given field, one simply did not know or, at least, the suspicion that another interpretation was possible or even necessary;

iv) As far as the development of educational research was concerned, Switzerland was no exception among the industrialised countries. It was estimated that, during the 1980s, investment in educational research represented roughly 0.60 per cent of total expenditure on education by Switzerland's public authorities. The most recent comparable estimate for OECD countries dated back to 1972, when the average figure was 0.05 per cent;

v) What was more, in the case of small countries like Switzerland, the effects of scale were very marked. For example, membership of learned societies for educational research was roughly equivalent to 6 per 100 000 inhabitants in both Switzerland and the United States, but the American Educational Research Association (AERA) had some 15 000 members compared with only 400 in the Swiss Educational Research Association (SSRE).

vi) The examiners had drawn attention to the efforts that Switzerland had made to assess the situation as regards educational research. The initiative for this had come from the Swiss Educational Research Association (SSRE), which had carried out this assessment with the support of the Confederation;

vii) The diagnosis with respect to educational research in Switzerland could be summed up in a few words: low overall potential coupled with an excessive fragmentation of this potential (a dispersion of energies and projects); regional inequalities (half of this research potential was located in French-speaking Switzerland, and half of this half in Geneva); a lack of institutional structures; and a lack of interdisciplinarity;

viii) The "Plan for the Development of Educational Research" put forward a series of recommendations directed to the cantons, universities and agencies responsible for research policy and promotion either at the Confederation level or closely associated therewith;

ix) This task had necessarily to be shared between the two levels of government concerned: Switzerland's federal structure meant that education was almost exclusively the prerogative of the cantons, whereas research policy was one of the areas where the Confederation played a key role;

x) The first steps in this direction were being taken: the Committee of the Conference of Cantonal Directors of Education (CDIP) will shortly be studying a memorandum submitted jointly by the Secretary-General of the CDIP and the SSRE.

Cantonal cross-border co-operation and unity

The *Delegate for Germany* wondered what measures could be taken to strengthen cohesion between cantons and whether there were centrifugal forces at work in Switzerland.

Mr. Arnet, replying to the question of "unity" of the cantons, their common ambition or their desire to conduct their own "centrifugal" external policy *vis-à-vis* Europe, said that it could happen that some cantons like Basel or Geneva, which had special relationships with neighbouring countries because of their economic or cultural interdependence, would pursue an overall education policy that was somewhat "out of line" with that of the rest of Switzerland. But this did not create any problem from the CDIP's standpoint since there was no canton that did not consider itself a loyal member of the Confederation.

Mr. Comby, as someone from a canton bordering two EEC countries, France and Italy, said he would like to add one further comment in this connection: a number of initiatives and even agreements existed, the aim of which was to strengthen cross-border co-operation in the cultural field or in that of education and training; the future of such co-operation would obviously depend on the outcome of the negotiations on the European Economic Area.

Mr. Erba also commented on the exchanges between Switzerland and other countries, quoting the case of Ticino. As a result of the demographic downturn, employers had resorted to recruiting young Italians, and youngsters living across the border in Italy had been enrolled in apprentice schools and now accounted for one out of 15 apprentices. This cross-border co-operation at the apprentice level was also reflected in the composition of the adult labour force: in Ticino, out of a total of 170 000 jobs, 39 000 were filled by workers living across the border in Italy.

Mr. Clement mentioned the fact that a Swiss passport was no longer so sought after in comparison with other countries in Europe. What effects had this had on the system of education?

Mr. Cavadini acknowledged that Mr. Clement's comment was a relevant one and that the attraction or attractiveness of a Swiss passport had declined with the increasing attraction of a European passport. Switzerland's naturalisation law had just recently been amended. The principle of dual nationality was now accepted and foreigners, who had enriched the country both by their skills and their presence, would no longer be forced, as in the past, to make this choice.

Mr. Laeng thanked the Swiss Delegation for all of the information they had supplied and said he was convinced that the Concordat helped to foster cantonal autonomy while at the same time encouraging the search for concrete solutions. In the last analysis, this agreement was still the best alternative, short of national legislation. He added that he had been struck by the vigour and vitality of Switzerland's educational research.

4. THE FORMULATION, IMPLEMENTATION AND MONITORING OF POLICIES

On several occasions the examiners have emphasized the potential value of Switzerland's varied experience. To date, however, this does not seem to have been made use of for the benefit of everyone in the formulation and implementation of policies. What is more, on a number of occasions, proposals for changes that were considered necessary (that is to say in accordance with a proper understanding of the public interest) and which were carefully prepared were rejected by direct popular vote. In addition, the partnership system, which is particularly well developed in certain areas, has not always produced the results that were expected and has tended to block what were regarded as essential measures.

Questions

14. *In the first place, the examiners would like to know how the authorities can resolve the ambiguities, not to say the contradictions, of the full and unlimited application of Swiss democratic principles to education. Are there problems as regards the presentation of projects to the public or perhaps from a public relations standpoint? Is there not a need to make absolutely clear what is a matter of overall policy and what are matters of detail as regards its application? Are the regional co-ordinating bodies and even the CDIP, for their part, sufficiently well equipped to be able to assist the cantons in convincing their public opinion to accept a particular measure that has become essential? In this respect, is it considered that the most meaningful experiments are properly evaluated and their results widely disseminated among all the partners concerned and among the public in general? How, in short, can Swiss public opinion be made more aware of the importance that needs to be placed on the future of the education and training system, including the need to allocate additional resources to it when this proves essential?*
15. *Do the Swiss authorities consider it desirable to set up a Higher Council on Education and Training along the lines of the Swiss University Conference (CUS) and made up of representatives of the Confederation, the cantons and the main partners concerned? Could this Council be the place where the aforementioned national guidelines would be finalised and adopted?*
16. *The examiners are of the opinion that both the Confederation and the cantons, through the CDIP and its related bodies, could strengthen those of their agencies that are currently responsible for education and training. In what respect should such structures and indeed responsibilities be strengthened, on the one hand in the case of the Confederation and, on the other, in the case of the CDIP?*
17. *Lastly, the examiners have suggested that, as far as responsibilities for final decision-making are concerned, the partnership system should be "managed" in such a way that it does not end up on occasions by either ignoring the needs of certain major partners or clients of the system or blocking necessary change. What measures do the Swiss authorities concerned intend taking in order to clarify these responsibilities and ensure that overall policy decisions prevail over sectional interests? In short, how can the partnership system be used as a means of synergy in the decision-making process?*

Mr. Silvestre raised the matter of the implementation and amendment of education policy. He underlined the insufficient use made of the possibilities of comparison between cantons which could result in a more dynamic policy. The specific questions he raised were:

- How did the authorities think that the contradictions arising from the application of democratic principles could be resolved?
- What was the solution to the possibly conflicting relationship between the patient search for a consensus and the dynamism of a global policy?
- With the arrival of 1993 many things in Switzerland were destined to change. For example, there would be the problem of the centrifugal forces within the border cantons. How could the transition be made from an implicit to an explicit consensus?
- How did the Swiss authorities see the future of their education system within a broader context? Were there any general lessons that other OECD countries could draw from the richly varied situation in Switzerland?

Democratic principles and co-ordinating structures

Mr. Comby made a number of observations concerning the processes of democracy in Switzerland. He pointed out that the principle of compulsory referendums applied in a number of cantons. In order to amend a law on education, therefore, there had to be a popular vote in favour; obviously, in some cases this limited the possibilities of reform, as Mr. Silvestre had pointed out. Mr. Comby gave two examples of what had occurred in the canton of Valais.

The first of these had been the reform of the *cycle d'orientation* which had formed part of an overall reform of the Valais canton's Education Act. To begin with, this was rejected by popular vote in 1983 and the whole procedure had to be gone through again, culminating in 1986 with the adoption of a reform of first-cycle secondary education. This had involved the expenditure of a great deal of time and effort to persuade and inform all the interested parties but, in the long run, such drawbacks were to some extent offset by the fact that the procedure ruled out an overly technocratic approach. In fact, the time spent informing and explaining could also be counterbalanced by swifter implementation of the measures agreed upon.

The second example was the creation, mentioned earlier, of higher (non-university) vocational training schools. In this case, it had been possible to act very swiftly in Valais because such decisions were in the hands of the parliament and not the people directly.

In Mr. Comby's view, these two examples illustrated not only the complexity and slowness of the process but also, in some instances, the possibility it provided of rapid and suitable solutions to specific problems. The answer to the question of whether it was possible to strengthen co-ordination was yes. As the report said, the structures already existed, but a drop more oil needed to be applied to all of this machinery and more life injected into the partnership process, while still remaining faithful to the system of federalism.

Mr. Poglia said he would like to clarify several points with regard to co-operation, i.e. the co-operation between the cantons and the Confederation, comment on the co-ordination between institutions within the Confederation and say a few words on the subject of the *maturité*.

There was a fairly clear division of powers between the cantons and the Confederation. The cantons had full responsibility for all compulsory schooling and for much of secondary education, with the Confederation being involved only as regards the *maturité*; the Confederation also had powers with respect to vocational education and universities. It was in the sectors of shared powers that a partnership was particularly desirable. As regards co-ordination between the federal agencies responsible for education and training policy (principally the Federal Department of the Economy in the case of vocational education, and the Federal Department of the Interior in the case of scientific matters and university education), it could be said that there was fairly ready co-operation between individuals and between services.

On the subject of gymnasium education and the *maturité* the Examiners' Report contained a number of questions or criticisms concerning the possible restrictive effect of the *Ordonnance fédérale sur la reconnaissance des maturités*. He felt that it was an exaggeration to claim that the *Ordonnance* was restrictive, even though the gymnasium system in Switzerland was beset with a whole series of problems. He believed that, until recently, there had been a broad consensus within Swiss education circles in favour of preserving the gymnasium system's reputation for quality, albeit of a somewhat selective kind, that it still had today.

However, the problems were becoming urgent and the various partners involved at the level either of the cantons, the teaching profession or the Confederation realised that the moment had come to undertake a number of reforms of gymnasium education and the federal *Ordonnance* governing examinations.

Mr. Cavadini said he would like to add a few words in reply to the key question raised by the examiners with regard to the uneasy co-operation between two institutions, each with its separate powers. From the institutional standpoint Switzerland's prime concern over the past ten years had not been to amplify the partnership but rather to simplify procedures. And the policy debate, which had been one of the more important ones during this ten-year period, had been concerned with establishing a precise division of responsibilities between the cantons and the Confederation. "An effort has been made to clarify these issues and this is one of the reasons why we are not enthusiastic about the suggestion of setting up a Higher Council on Education and Training. What powers would it be given? What would be the legal basis on which it would be founded? Would it not be instrumental in bringing together precisely those things we want to keep fairly separate? But it is obvious, given the size of our country, that contacts are essential. Those we maintain between the cantons and the Confederation mean that, nonetheless, we understand one another and that things get done; we would prefer, however, not to give such official form to this proposed co-operation".

Why partnership is necessary

On the subject of partnership, *Mr. Natsch* said that it was a fact that, in Switzerland, the parties concerned were widely consulted before any decision was taken. This was called democracy by consultation and this operated at both the federal and cantonal levels. On the one hand, it made for stability, because the opinions of the parties concerned by a measure were always canvassed before it was implemented; on the other, it was also the cause of a certain amount of resistance to change. In the case of vocational education, which straddled economic policy and education policy, consultation of business and industry associations could as easily retard as accelerate the process. The reason why this consultative democracy, which occasionally impinged upon the powers of parliaments, was such an important factor was that, in the Swiss system, the parties concerned also had a degree of responsibility in carrying out the operations involved. For example, in the case of vocational education, the associations had the task of training apprentice masters, organising introductory courses and preparing examinations, and all this usually without much in the way of financial compensation, since it was expected that a certain amount of work should be performed for the benefit of the community in return for a modest or even token payment. It was therefore understandable that those concerned also wanted a say in the matter. This could only be described as a policy of acceptance since, if those concerned did not accept the measures proposed, these would remain a dead letter.

Federalism and differences between cantons

The *Delegate for the Netherlands* asked what were the mechanisms linking industries to the various aspects of education and training, and continuing education and training in particular. The *Delegate for Australia* asked what was the central policy-making role of a federal state.

The *Delegate for France* wondered whether, in the co-ordinating bodies, there were sectors that were more equal than others. Did all of the cantons have the necessary resources to be autonomous? Were there not regional leaders or dominant cantons?

The *Delegate for Italy* wondered to what extent the differences between cantons reflected socio-economic differences.

Replying to the Delegate for Australia, *Mr. Cavadini* said that each canton bore the total cost of its education system. The Confederation used to subsidise the purchase of one map per school; this had been a very old tradition that had been abandoned five years ago, without many tears being shed. The cantons, therefore, had full control of their education system. They levied the necessary taxes and shared the responsibility and the costs of primary and secondary education with the communes. In no way was the Confederation involved in these systems.

This partly answered the *Delegate for Italy*'s question. It was a fact that some cantons had fairly elaborate and fairly extensive education systems with several types of school, providing training to thousands of students or apprentices; if these cantons did not at the same time have an economy which enabled them to provide jobs for their school-leavers, it was obvious that these would move to a neighbouring canton. This meant, therefore, that it was always necessary to have some sort of balance, some sort of compatibility between the education system, its cost and its profitability, and the demand generated by the local economy. There were thus, obviously, disparities between cantons.

Replying to the *Delegate for France*, *Mr. Cavadini* said that the cantonal authorities took great care to ensure that the co-ordinating bodies did not become technocratic or administrative agencies, saying that, "We would not agree to executive agencies taking decisions that properly belonged to the policy-making authority". The question on the equality of the cantons with respect to co-ordination was very much to the point. Economically powerful cantons could well not feel the need for co-operation; it was also true that some of the larger or more powerful cantons, which had their own facilities, had little to gain from this. They were not obliged to take part and, here too, it was true that "some are a little more equal than others!".

Replying to the *Delegate for the Netherlands*, said that adult education in Switzerland still did not have a precisely defined legal status. Adult education was supported — and once again this was a partnership venture — by the Confederation in the form of its special measures with regard to redeployment or continuing occupational training, by the cantons and by the machinery for co-ordination between the private sector of the economy and either the cantons or the Confederation. However, there was no formal national agency for adult education.

5. CONCLUSIONS

Mr. Clement emphasized that the examiners' task had not been to be flattering. They had been aware of the fact that, from an international standpoint, the performance of Switzerland's education system was excellent; however, it was difficult to understand why, for example as far as schools were concerned. He thought that there was an underlying ethos of education in Switzerland, a Swiss model of education, which might to some extent explain its success.

Mr. Silvestre in his closing remarks referred once again to the concepts of synergy and democracy within Switzerland's education system, while stressing the fact that it was nevertheless important that the education system should give some thought to its future.

The Chairman, *Mr. Hummeluhr*, was convinced that the concepts of democracy and an ethos of education were the keys to the secret of Switzerland's education system.

In his statement concluding the discussion, *Mr. Cavadini* said, "You have made what we consider to be a number of highly complimentary remarks and we are of the opinion, as you are, that no country can serve as a model for another because schooling, education, takes many differing forms. We have realised what are the shortcomings we still need to work to overcome and the examiners have helped us in this respect, and we are grateful to them. We would like to say that there are four things which will encourage us in this task:

- the recognition of the quality of our system as a whole;
- the value of a system of vocational education which is neither incomplete nor second rate;
- the acknowledged ability of our federal system to innovate; and
- the wish of this Committee to see Switzerland act as a model in certain sectors.

On the other hand, there are aspects we need to examine and which you have helped us to define more clearly: the question of statistics, the early or unduly early selection process, plans for the gymnasium sector in the light of European developments, teacher mobility, imparting a fresh impetus to the Concordat approach and the improvement of certain co-ordination procedures.

As for what structures need to be created, this is a question that our country will have to address. But, in any case, we cannot conceive of a form of co-ordination that would be imposed from above; in Switzerland the pyramid is always built from the bottom up.

Your review has come at a very opportune moment: after twenty years of a Concordat which has worked well but which is in need of revision, and at a time when our country is opening out to Europe, albeit somewhat late but nonetheless enthusiastically. Your review will certainly have an impact in our country and will provide an excellent stimulus for our thinking and for the adjustments you would like to see".

Part Three

THE EDUCATION SYSTEM IN SWITZERLAND

Summary of the background report
prepared by the CDIP
Conférence suisse des directeurs cantonaux de l'instruction publique

THE TWENTY-SIX CANTONS

AG	Aargau
AI	Inner Appenzell
AR	Outer Appenzell
BE	Berne
BL	Basle
BS	Basle-city
FR	Fribourg
GE	Geneva
GL	Glaris
GR	Grisons
JU	Jura
LU	Lucerne
NE	Neuchâtel
NW	Niederwalden
OW	Oberwalden
SG	St-Gallen
SH	Schaffhausen
SO	Solothurn
SZ	Schwyz
TG	Thurgau
TI	Ticino
UR	Uri
VD	Vaud
VS	Valais
ZH	Zurich
ZG	Zug

1. THE GEOGRAPHICAL, POLITICAL AND CULTURAL CONTEXT

Switzerland is a small country (41 300 km^2) in the heart of Europe, which shares its frontiers and its three main languages with Germany, France, Italy, Austria and Liechtenstein. Three natural regions form its relief: the Jura in the North-West, the Plateau (or Middle Country) between Lake Constance and Lake Geneva, and the Alps in the South and to the East. This geographical variety has a strong influence on the organisation of education.

In 1987, Switzerland had a population of 6 567 000 (mean density: 160 inhabitants/km^2; on the Plateau: 500 inhabitants/km^2!). The labour force accounts for 48.5 per cent of the total population.

The proportion of foreigners in the resident population is at present 15.5 per cent (21 per cent of the active population). In the 1970s, Switzerland felt obliged to take certain stabilization measures. The integration of foreigners in the schools is an important element of Swiss educational policy.

The Swiss Confederation, created in 1291, became a Federal State in 1848; it comprises 26 partially autonomous cantons, themselves subdivided into communes which also enjoy a certain autonomy.

The principles of direct democracy are firmly anchored at federal level, but even more so in the cantons and communes. Citizens are frequently called on to vote, either to elect their authorities or to exercise their rights of initiative or referendum. Decentralisation and direct democracy have logically produced the militia system: no professional army or permanent parliament.

At federal level, the Parliament (Federal Assembly) comprises two Chambers which are equal in law: the *Chambre du peuple* or National Council (200 members) and the *Chambre des cantons* or Council of states (46 members). Twelve parties are represented, but the four most important (Radicals, Christian Democrats, Social Democrats and Swiss People's Party) share 4/5 of all the seats between them. The government (Federal Council) consists of seven members elected by the Federal Assembly and, each year, one of the Federal Councillors is elected President (of the Confederation), but he remains *primus inter pares*!

Switzerland's long-term policy may be defined by the following key words: direct democracy, federalism, neutrality, national defence based on compulsory military service, market economy and social security. Foreign policy is based on the same principles and endeavours to combine neutrality with an open door to the world by means of a policy which is above all geared to economic, humanitarian and cultural co-operation. A member of several international organisations (Council of Europe, OECD, GATT, CSCE, MDCS, UNESCO, EFTA), Switzerland rejected membership of UNO by referendum on 16 March 1986. As the United Europe of 1992 dawns, Switzerland faces serious problems.

The cantons have a governmental and administrative organisation which is basically similar to that of the Confederation. But the structure varies considerably from one canton to another for reasons of tradition but especially of size (Zurich is 46 times more densely populated than Appenzell-Inner Rhoden) and of economic development.

Switzerland has a cultural diversity which is inherent to its multilingualism. Thus, it is divided into four linguistic regions whose inhabitants speak German, French, Italian and Romansch. Of these four national languages, the first three are regarded as official languages at federal level. Radio and television are represented in each of the four regions. About 65 per cent of the population speak German, 18.4 per cent French, 9.8 per cent Italian and 0.8 per cent Romansch; some 6 per cent, mostly foreigners, have a different mother tongue. These proportions have remained much the same for many years.

The official teaching language is decided by the cantons according to the principle of territoriality (so in state schools in German-speaking Switzerland teaching is in German, and so on). The first foreign language taught is French in German-speaking Switzerland and Ticino, and German in French-speaking Switzerland. The widespread use in German-speaking Switzerland of *Schwyzertütsch* (Swiss German), a dialect with many variations, raises communication and language teaching problems.

As regards religion, in 1980, 47.6 per cent of the population were Roman Catholics, 44.3 per cent Protestant, 0.6 per cent belonged to other religions and 7.5 per cent had "no religion". The state school is obliged by the Confederation to show tolerance, but this is not incompatible with denominational or interdenominational education, which most cantons include in their curricula.

Economically, although Switzerland was originally a country of farmers and emigrants, it turned to industry in the 19th century and in the 20th has become a services country. While at the outset of the 19th century, two-thirds of the population still worked in the primary sector, this proportion had fallen to 45 per cent by 1900 and to only 6 per cent by 1985; at the same time, the proportion working in the secondary sector rose from 25 to 39 per cent and in the tertiary sector from a tiny 10 per cent to 55 per cent. The latter mainly comprises banking and insurance, the civil service and state education and, of course, tourism. This development has gone hand in hand with a rising rate of urbanisation. Currently, nearly half the population lives in urban communes (over 10 000 inhabitants).

Nonetheless, there are still very marked differences between the regions. There are indeed some highly industrialised centres, but also regions, both in the plains and the mountains, where farming is almost the only activity. Economic potential therefore varies very much from one canton or one commune to another, prompting the Confederation and the cantons to practise an active compensatory policy (subsidies, land-use planning).

The Swiss economy depends largely on the outside world. For example, the Confederation exports 30 per cent of its goods and services. Taking all products together, 56 per cent of exports go to the countries of the European Community, whence over 70 per cent of imports come.

Switzerland has enjoyed full employment for some years (except between 1973 and 1975). The unemployment rate is below 1 per cent. There is even a shortage of qualified personnel in several economic sectors — and at every level — so that foreign workers have had to be recruited both for jobs requiring few specific skills and for senior scientific and technical posts.

In all, the State's contribution to gross national product is much less than the average for the OECD Member countries. This is therefore also the case for the total tax burden.

If the Swiss identity had to be defined in the simplest terms, the following characteristics of political, economic and social life would emerge:

- *Multiplicity and decentralisation:* the fact that there are so many decision-making bodies undoubtedly curbs any national planning or action and leads to a lack of transparency and coherence. Decentralisation, on the other hand, favours the participation and even the active involvement of all citizens, as well as stimulating competition.

- *Consensus and pragmatism:* the system's aim is to avoid tension and to compromise rapidly, taking all trends of opinion into account. This of course limits the opportunities for fundamental debate but, on the other hand, permits pragmatic action.
- *Isolationism and cosmopolitanism:* Switzerland's historical tradition and small size engender a self-awareness which sometimes veers to isolationism (parochialism), though in the economic sector, by contrast, the door to the rest of the world is kept wide open, as it is, too, through the media and the population's linguistic abilities.

2. THE EDUCATION SYSTEM IN SWITZERLAND

It is on purpose that we call it the education system in Switzerland and not the Swiss education system. Swiss schooling is indeed strongly influenced by the political and cultural factors referred to above and, since education is mainly the responsibility of the cantons, Switzerland in fact has 26 education systems which sometimes differ very appreciably one from another, though all draw on the same traditional sources and collaborate in more than one respect. Furthermore, for the sake of consistency, certain important areas are governed by federal rules.

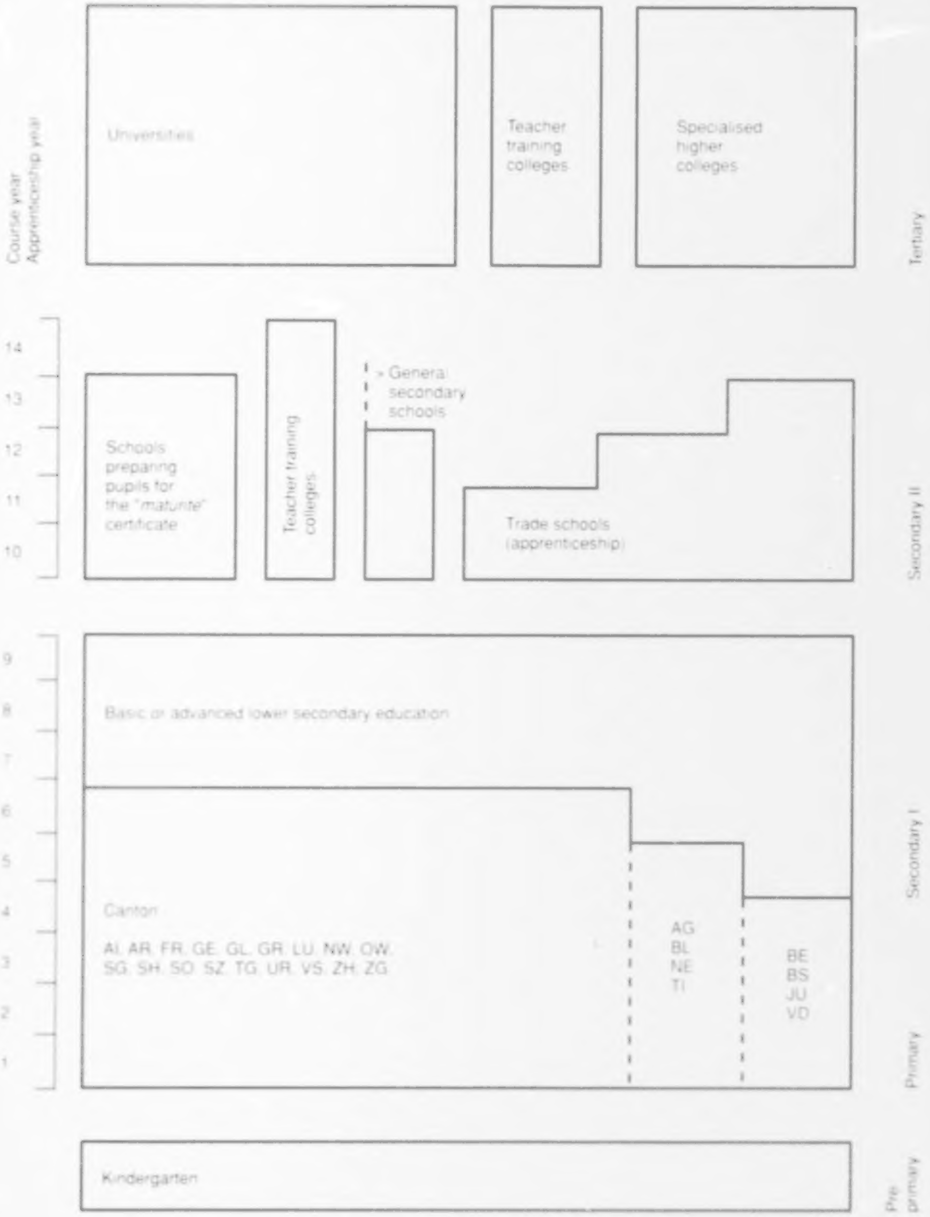
Policy-making and legal responsibility for education in Switzerland, as in any country with a federal structure, come up against the problem of dividing tasks between the Confederation and the cantons and of co-operation between the various authorities.

Article 3 of the Federal Constitution states that "the cantons shall exercise all rights which are not delegated to the federal authority". But the Constitution only allows the Confederation a few specific tasks; the cantons therefore reign supreme over most of the educational organisation, which they control through educational legislation and regulations on the granting of scholarships. These laws and regulations differ notably from each other (historical reasons, size of the cantons, financial resources, etc.).

The responsibilities of the Confederation are briefly as follows. It obliges the cantons to organise an "adequate primary education" which is compulsory, free and supervised by the cantons; it oversees vocational training in industry, the crafts, commerce, agriculture and domestic science; it lays down regulations on the practice of gymnastics and sports; it runs the Federal Institutes of Technology in Zurich and Lausanne, the Swiss Vocational Training Institute in Berne and the Federal Sports School in Macolin; it assists the cantonal universities with grants; it provides support for scientific research; it makes grants to the cantons towards their scholarship disbursements; it supports Swiss schools abroad; through the legislation on invalidity insurance, it provides support for the education and integration of disabled children and adolescents.

When the Confederation enacts the necessary legislation, it entrusts its enforcements to the cantons or, exceptionally, to private persons. The cantons are thus largely responsible for schools which do not directly come under their legislative sovereignty. Their position of strength is further increased by the fact that the Confederation gives them a right of consultation. They usually instruct the communes to set up and maintain certain types of school, including the optional kindergartens and compulsory schools.

It should also be pointed out that neither the Confederation nor the cantons have a single administrative structure covering the whole education system. At cantonal level, vocational training is the responsibility of the Department of Education or the Department of the Economy, Diagram 1 **The education system (simplified)**


Course year
Apprenticeship year
Universities
Teacher training colleges
Specialised higher colleges
Tertiary
14
13
12
11
10
Schools preparing pupils for the "*maturite*" certificate
Teacher training colleges
» General secondary schools
Trade schools (apprenticeship)
Secondary II
9
8
7
6
5
4
3
2
1
Basic or advanced lower secondary education
Secondary I
Canton
AI, AR, FR, GE, GL, GR, LU, NW, OW, SG, SH, SO, SZ, TG, UR, VS, ZH, ZG
AG
BL
NE
TI
BE
BS
JU
VD
Primary
Kindergarten
Pre primary

special education comes under the Health or the Social Affairs Department, etc.; at federal level, universities, research, *maturité* (school certificate), scholarships and sport are the responsibility of the Federal Department of the Interior, vocational and agricultural training that of the Department of the Economy. So decisions on education are taken at many different levels and by a wide variety of bodies, and do not always derive from any logical internal planning. The system as a whole seems to lack flexibility and transparency.

However, the advantages of the system are considerable. For instance, the cantons regard their sovereignty in educational matters as an essential aspect of their political and cultural identity and this, in a multilingual and multicultural country, is basic to balance. The system also allows the cantons to take account of local cultural factors — while at the same time maintaining a uniformly good quality basis for their education.

Administrative decentralisation also has its advantages since general education, and especially vocational training, take the social and economic environment into account. Education is thus both in direct touch with problems and relatively flexible, which helps make up for the absence of a central higher authority.

No radical change in the allocation of responsibilities therefore appears to be necessary, since it does seem possible, leaving matters as they stand, to deal with the main problems of the day, which will be discussed later — horizontal co-ordination (intercantonal) and vertical co-ordination (cantons/Confederation, intracantonal); the gaps that exi[illegible] (areas not at present covered by any authority, such as continuing education); international co-operation.

As the organisation of the education system is described in Chapter 3 we show only a general simplified chart of its structure here.

Educational planning and policy

As we have seen, it is the cantons which plan their education system and take all the decisions in that connection, at least at compulsory schooling level. For second-cycle secondary schools (providing advanced general education or vocational training), they are obliged to take account of the general conditions imposed by the Confederation; their freedom of action is nonetheless still very great.

Supervision and administration of cantonal education are the business of the cantonal government and its education department (Ministry of Education) and, in several cantons, of the Education Council (*Erziehungsrat*). Educational administration in the cantons is more or less elaborate, depending on their size. But in the 1960s they all set up pedagogical services to ensure proper development of schools and, sometimes, advise on work in this area (school improvement, curriculum development, etc.).

In all cantons, teachers are legally and in practice entitled to intervene in administration. This includes the right not only to be consulted, but also, especially in German-speaking Switzerland, the right to participate directly (as members of the Education Council and of the local education authorities). By virtue of this principle teachers are directly concerned with the running of schools and this speeds up — or delays! — the introduction of innovations. Parents' rights, on the other hand, are less institutionalised. At commune level, for example, under the system of direct democracy, all citizens have a voice in decisions on the education system, and this diminishes the influence of parents, even though it is they who are directly concerned. At cantonal level, parliaments (by virtue of their legislative and budgetary powers) and citizens (through referenda or initiatives) can also bring pressure to bear on the organisation of the education system, as can the communes, which have the right to intervene. Obviously, the fact that there are so many decision-making bodies makes it anything but easy to harmonize and implement educational policy at this level.

Intercantonal co-operation and educational co-ordination

Up to the Second World War, the cantonal systems were quite separate, although as early as in 1987 the heads of the cantonal education departments (cantonal ministers of education) had established a Conference for the purposes of mutual information, exchange of experience and co-ordination of the education system at national level. It was above all from the 1960s on that an imperious need for better co-ordination of educational policy began to be felt. Institutions were established, often in association with the Confederation. The *Conférence suisse des directeurs cantonaux de l'instruction publique* (CDIP) was reorganised and given a small secretariat, and four regional conferences were set up.

One important instrument for co-ordinating the education system is undoubtedly the *Concordat sur la coordination scolaire*, an agreement reached by the cantons in 1970 in order "to develop the school and harmonize their respective cantonal legislations" (Article 1). To date, 25 of the 26 cantons have signed this agreement, and the only non-signatory canton takes part in, and helps to finance, all the joint work. The signatory cantons have undertaken to co-ordinate their educational legislation in the following way:

Age of entry to compulsory basic education: 6 years old at 30th June, with the possibility of enrolling up to four months earlier or later; period of compulsory education: 9 years, with a minimum of 38 weeks' schooling per year; period of education up to the *maturité* (school-leaving certificate): not less than twelve or thirteen years at most; start of the school year: between mid-August and mid-October.

Applying these few general provisions raised considerable problems since the educational legislation cannot usually be amended without the approval of the citizens. The adjustment process lasted over 15 years, the stumbling block having in fact been a minor issue: the start of the school year. Apart from setting out the obligatory requirements listed above, the agreement is above all intended to be an instrument for voluntary co-operation and harmonization (reforms, recognition of diplomas, co-operation on research planning and educational statistics, etc.). The agreement establishes no special agencies but assigns tasks to the CDIP and its executive bodies.

Various other intercantonal agreements have been signed, regulating the funding of joint institutions, access to schools outside cantonal boundaries and other matters of common interest.

The most important from the policy standpoint is without a doubt the 1979 *Accord intercantonal sur le financement des universités*, amended in 1984, whereby the non-university cantons undertake to pay contributions to the cantons which do have universities. In exchange, the latter guarantee students from the contributory cantons the same rights as students from their own.

The primary aim of the educational agreement was to co-ordinate the varied educational structures of the different cantons ("external" educational co-ordination). But since this proved much more difficult than expected, efforts focused first of all on "internal" co-ordination stepping up collaboration on methods of teaching. Some of this work has been the subject of formal recommendations to cantons.

Since 1970, the CDIP has carried out several exploratory studies (on secondary education, teacher training, *écoles du degré diplôme* providing post-compulsory education) and some nationwide reform projects (mathematics, modern language and computer science teaching).

It has also launched SIPRI, a major primary school review project. The CDIP is currently mainly concerned with continuing the co-ordination exercise mentioned above, as well as with the projects "Further teacher training" and "Education in tomorrow's Switzerland", and with preparing outline curricula for the *Gymnasiums* (high schools).

Lastly, the regional conferences are also important to intercantonal co-operation. Set up by the CDIP to take particular account of the fact that certain groups of cantons must work especially closely together for linguistic, historical and geographical reasons, the four regional conferences (French-speaking Switzerland and Ticino, North-West Switzerland, Central Switzerland and Eastern Switzerland) are pursuing their own co-ordinating policy on a smaller scale than that of the 26 cantons. The conferences' activities range from the joint preparation of curricula and the publication of teaching aids to the joint management of educational institutions, and agreements on the recognition of diplomas and on access to schools have been concluded.

The Confederation is mainly concerned, in compliance with its legal responsibility for education, with vocational training and science and research policy. It also takes a hand in the high school system (recognition of *maturité* certificates) and in cantonal scholarship award policy (through the federal grants system). It has also recently endeavoured to initiate action in certain areas (computer science, continuing education/training) by launching a campaign for advanced vocational training.

Confederation involvement in the universities goes back a long way (to the foundation of the Zurich Federal Polytechnic School in 1855), but was intensified in the 1960s with the adoption of the Federal Act on Aid to the Universities and the creation of two co-ordinating bodies, the Swiss Science Council (*Conseil suisse de la science*, CSS) and the Swiss University Conference (*Conférence universitaire suisse*, CUS).

An organisation chart of the Swiss educational policy institutions is given below.

State and private schools

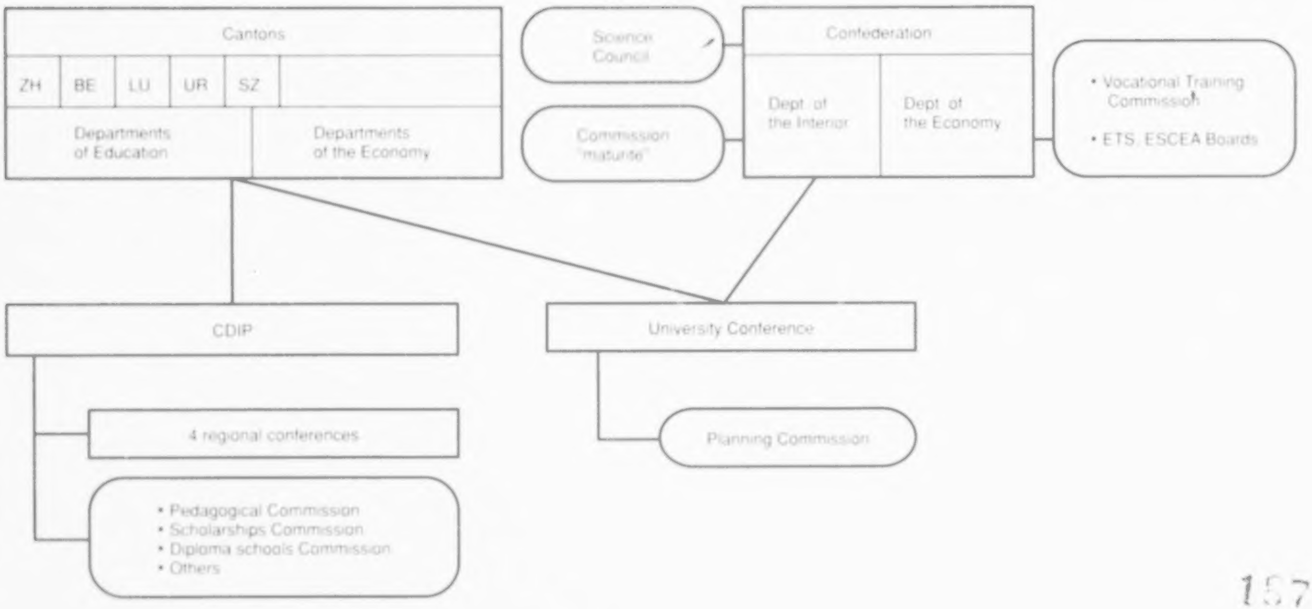
The federal Constitution lays down that primary education must be State-run, and this principle has been generally adopted by the cantons for compulsory schooling as a whole. There are some private schools, but they are very rarely grant-aided. The upper secondary schools are usually cantonal or communal; however, private secondary schools (many of which used to be denominational) are frequently recognised and even subsidised. Most of the vocational schools are also in the hands of the cantons, whereas general and vocational continuing education/training largely depend on the private sector while enjoying federal or cantonal aid. The proposals for institutionalised co-operation between the State and representatives of the private sector offering opportunities for post-secondary education should be closely examined.

Public expenditure and cost-sharing

Public expenditure on education and research amounted in 1986 to SF 12 997 billion, or 19.9 per cent of total public expenditure, compared with SF 3 756 billion (18.5 per cent) in 1970. From 1970 to 1980, the average annual growth rate was 9.5 per cent and the growth rate of total public expenditure 8.8 per cent; between 1980 and 1985, the former dropped to 5.6 per cent, thus falling below the latter (5.9 per cent).

Compulsory schooling and second-cycle secondary education are almost exclusively funded by the cantons and communes. The Confederation covers 20 per cent of the funding for voca-

Diagram 2. **Educational policy institutions**



ETS : Ecole Technique Superieure
ESCEA : Ecole Superieure de Cadres pour l'Economie et l'Administration

tional training/education: at this level, given the dual system, there is also a fairly high private industry participation. Expenditure on the universities is covered by the cantons and the Confederation. On the whole, the Confederation's share has fallen since 1970 (redistribution of tasks, cessation of subsidies, etc.), though since 1985 it has been rising slightly again (encouragement of research, universities, etc.).

Educational research in Switzerland

Switzerland has produced eminent educationists ever since the 18th and 19th centuries (Rousseau, Pestalozzi, von Fellenberg, Girard, Flournoy, Claparède, Bovet, Piaget, Dottrens). But it was mainly in the 1960s and 1970s that educational research really took off again most remarkably in line with the great expansion of the education system.

At present, this research is carried out by many quite small units, over two-thirds of them set up between 1965 and 1974. Half of these are attached to the university sector, one-third belong to the cantonal administrations, are answerable to regional conferences of directors of education or to the Confederation, while the remainder depend on the private or semi-private sector. Educational research is divided between fundamental research, on the one hand, and applied research and development, on the other. In the latter case, it endeavours to contribute to the expansion and improvement of education. According to a study covering the period 1974-1983, the research carried out during those years consisted essentially in making an inventory of facilities and pinpointing problems (analysis and interpretation: 43 per cent) and in evaluation, development, planning and consultation (42 per cent of the work).

Since 1971, the Confederation and the cantons have shared responsibility for the Swiss Centre for the Co-ordination of Educational Research in Aarau. The Swiss Educational Research Society, which was set up in 1975, published in 1988 a national programme for the development of educational research in Switzerland.

3. EDUCATION AND TRAINING INSTITUTIONS

PRE-PRIMARY AND COMPULSORY EDUCATION: GENERAL COMMENTS

The tasks of today's school have changed considerably. Although it still has to transmit the basic knowledge required for a proper integration in working life and society, while inculcating savoir-faire and self-reliance and promoting personal fulfilment, the school is confronted with new problems: the widespread move towards tertiary employment, a more heterogeneous population, and open public debate at all levels about education.

So far as compulsory schooling is concerned, however, the fundamental issues centre on equal opportunities, all-round education for the individual and education in democracy.

The demographic trend over the last 15 years raised particularly serious problems for pre-primary and compulsory education. Between 1973 and 1987, enrolments fell by about 30 per cent, from 540 000 to 375 000. Planning measures had to be adopted (closure or grouping of classes, central planning, etc.).

At the same time, the problem of teacher unemployment arose and, although its scale was never alarming, certain cantons had to take emergency action (restrictions on access to teacher training, provision of alternative employment, calls for solidarity on the part of other cantons, etc.). The trend is now the other way, notably as a result of the action taken, and currently certain regions are again experiencing a teacher shortage.

But the demographic decline has had certain positive effects (smaller classes, with the number of pupils falling from about 30 in 1970 to 20 in 1980 and 18.7 in 1987/88; reforms and smoother introduction of innovation, provision of support, introduction of a tenth year of schooling, etc.). It can be said, simplifying somewhat, that educational policy in Switzerland no longer seeks to make substantial savings but rather to improve education in general.

PRE-PRIMARY EDUCATION

Pre-primary education is available to children aged 3/4 and 5/6, up to compulsory school age.

At the age of 5/6, or one or two years before compulsory schooling, German-speaking Switzerland has the *kindergarten*, based mainly on play, French-speaking Switzerland the *école enfantine* (infants' school) and Ticino the *scuola materna* (nursery school), which are more concerned with early learning. The average number of children per class is 18/19, only 1 class out of every 10 having more than 24. Attendance at nursery school in effect is optional almost everywhere. Only 2 per cent of all children now enter primary school without first going to a nursery school. On average, two-thirds of the children concerned attend first-year nursery school and nearly all the age group who will be going into primary school attend during the second year.

This development came about largely because of the falling birth rate and because it provided the opportunity to keep nursery school teachers on. As regards educational policy, however, only recently was the full value of all the different aspects of pre-primary education recognised: development of the child's personality, socialisation, fairer chances (e.g. for the children of immigrant workers), preparation for compulsory education, early detection of possible handicaps. Some cantons have even introduced mobile pre-primary schools that do the round of the hamlets in sparsely populated regions.

The transition to primary school is the subject of special experiments, including one in Geneva (FLUIDITÉ), which is the most elaborate.

Especially important for immigrant workers' children are the mixed infants' classes where they use their mother tongue and are taught about their own culture while at the same time learning the language and culture of the host country in contact with Swiss children so that both groups benefit.

COMPULSORY EDUCATION

Compulsory education is divided into two cycles: primary and secondary I (also called general secondary school or orientation stage-*cycle d'orientation*).

The primary school generally has classes graded from 1 to 6; some cantons have grades 1 to 4 and a few 1 to 5. It caters for pupils between 6/7 and 12/13 (sometimes 10/11 or 11/12) years old.

Secondary I schools cover grades 7 to 9 (in a few cantons, 6 to 9 or 5 to 9).

For historical reasons, these two cycles differ notably one from the other and from one canton to another. For instance, teachers receive a different type of training; different weightings are attached to educational targets; approaches to selection differ, though it does as a rule take place quite early on; and the move up from primary to secondary I is managed in different ways.

Primary education

An intercantonal project, SIPRI, has reviewed primary education. Its findings have been summarised in 22 chapters of a final report which highlights the need:

- for the school to suit local people;
- for local people to share in responsibility for innovation;
- for schools to be given sufficient scope to innovate;
- for the educational process to be planned as a whole (whereas, as matters at present stand, compulsory education sets up an internal ranking of targets, compartmentalises classes and breaks education up into the different disciplines).

Now, as in the past, it is the principle that a single teacher should be in charge of the class at primary level. There are some exceptions, however, such as tandem teaching, which has in certain cases helped to reduce the overstaffing problem experienced in a few cantons.

The school week ranges from 20 lessons (1st and 2nd primary grades) to 34 to 36 lessons (5th and 6th grades). The usual curriculum concentrates on the basic tools of learning (reading, writing, arithmetic), the environment (natural science, history, geography) and artistic accomplishments (singing, music, drawing). The primary school has taken on an important new task by introducing the early learning of a second language (German for French-speaking Switzerland, French for German-speaking and Italian-speaking Switzerland) in the 4th and 5th primary grades.

Classes are held morning and afternoon and the children go home for their mid-day meal. In some isolated regions the communal authorities organise a "school canteen" at noon. In recent years, there has been a sometimes strong demand in certain towns for "whole-day schools" to look after pupils both during the mid-day break and before and after classes.

First cycle (lower) secondary education

Depending on the canton, first-cycle secondary education is separate or co-operative in type, varies in length and is organised differently. The trend is towards the co-operative type at age 12 (six years of primary school for all, three years of first-cycle secondary education, organised in a small number of sections [two] with bridges from one to another, streamed classes for the basic subjects and optional classes open to all).

It is probably in the organisation of first-cycle secondary education that the variety of the cantonal education systems shows up most strikingly.

Depending on the canton, lower secondary education lasts 3, 4 or 5 years and comprises 2, 3 or 4 different sections with different names. Various comprehensive school experiments have not outlived the experimental stage, apart from the *cycle d'orientation* (orientation stage) in Geneva. However, some cantons have adopted certain features of the comprehensive school such as improved permeability (transfer from one section to another) and individualisation of teaching by reducing the size of sections, introducing optional or streamed classes or the joint teaching of certain subjects to pupils from different sections. The elementary sections (called practical, modern or pre-vocational, according to the canton, *Realschule* in German-speaking Switzerland) prepare the way for basic vocational training. The advanced sections (general, science and classical sections) are a preparation for more advanced vocational training or the *maturité* schools. In some cantons, the junior level of the *maturité* schools (*Untergymnasium*) is included in secondary I education as a separate stream.

It is hard for the concept of the unity of compulsory education to establish itself in education systems in Switzerland, since while lower secondary education does prepare some children for long studies, most pupils (about 70 per cent) go into a specialised trade apprenticeship after their secondary studies.

The educational organisation offered is therefore necessarily differentiated as to choice of subject, pace, timetable and approach. Lower secondary education thus encompasses a problem of transition that is threefold: upstream, the transition from primary education; downstream, guidance/selection for a parting of the ways between apprenticeship and studies; and within, movements of pupils among the various component sections.

First-cycle secondary school teachers find themselves faced with many conflicting tasks. They are expected to teach the basic subjects and to instil a knowledge of cultural heritage, scientific knowledge and democratic values, while at the same time preparing pupils for studies or apprenticeships, adjusting to primary education reforms, assimilating technological innovation and catering for underprivileged groups (immigrants). And on top of all this, they are expected to adopt a more open and modern style of teaching!

Any education system is always as strong as its weakest links. As in other European countries, the education of children aged 12 to 15 is evidently the weakest link in education systems in Switzerland.

First-cycle secondary schooling is compulsory, marks the beginning of secondary education and constitutes the foundation of a child's subsequent school career. This latter function means that during the final years of compulsory education considerable efforts must be made to provide continuing, well thought-out and judicious guidance, and that a choice of courses and subjects must be available so that each pupil can make the best of his or her abilities and interests. In compulsory education, such choices must be kept open and reversible over a long period of time. This principle is intrinsic to the objective of democratising education. But it comes up against the objective of preparing a certainly increasing part, but only a part, of the school population for second-cycle secondary studies. These two aims necessarily conflict, sometimes in terms of organisation and structure of the comprehensive school, but usually as regards methods. First-cycle secondary education open to all children is on the way to finding its identity, but all too often a selective approach still persists, or the education on offer is much too primary in nature.

Programme, curricular reforms, teaching aids

In federal Switzerland, ever since the creation of the State school, every canton has set its own curriculum, which is regularly updated. Since 1969/70, however, curricular reform has taken on a resolutely intercantonal character. This co-ordination at national level has, for example, permitted the preparation and acceptance of "guidelines" and "meeting points", a kind of lowest common denominator, acceptable to all cantons, a "minimum common market" for curricula. At regional level, co-ordination goes still further: in French-speaking Switzerland, for example, three common curricula have been adopted: for grades 1 to 4 (1973), 5 and 6 (1979) and 7 to 9 (1983). During the 1970s and 1980s curricula were essentially subject-oriented and largely based on work by specialists. Currently the need to reconcile specialist viewpoints with the constraints of daily teaching practice is prompting a reformulation of curricula setting less complex targets, within a structure suitable for practical use in daily classroom work.

Teaching aids, based on the curricula and methodology adopted, are created by cantonal Departments of Education working on their own or in co-operation with one another. The first alternative is often costly in terms of work, skills and money, and the second is increasingly resorted to, two or more cantons working together. Curricula have been reformed many times over during the past 20 years or so, especially as regards mathematics, mother tongue, foreign languages and computer science.

Mathematics teaching has been modernised in every canton in accordance with the principles familiar to the Western world since the Royaumont seminar (1959). This modernisation took effect throughout the country in the 1970s, starting in the junior classes and working its way up. Teaching in all grades has now been overhauled.

After a few teething problems, this reform was well accepted on the whole and surveys have noted a significant rate of satisfaction. But improvement is still needed as to detail to bring greater flexibility, generalise methods and teaching aids, and smoother transitions, notably to post-compulsory education.

Teaching of the mother tongue, too, has been modernised in every canton. This began in the early 1980s, from the junior classes upwards. It has been well received by the primary schools, and surveys denote satisfaction with it, though it has had a mixed reception from lower secondary school teachers, who are very much either for or against it, depending on the region and their own views on the question. Here the transition from one level to the next is particularly tricky.

In modern languages, in line with Council of Europe recommendations in 1961 and 1971, the CDIP/CH proposed in 1975 that the cantons implement a language policy based on the following principles:

- learning a modern language to be an aim for all pupils;
- early introduction of a modern language in the 4th or 5th grade of primary education; introduction of a second modern language in secondary I;
- German to be taught in French-speaking Switzerland and French in German-speaking Switzerland and Ticino;
- four learning priorities: communication before literature, speaking before writing, understanding before expression, the practical before the theoretical;
- teaching options: regular short classes, no marks or homework, a distinction between the basics and later advanced work, special courses for teachers and creation of teaching aids.

This teaching reform in compulsory education will soon have been completed and the first modern language status bestowed on the second national language has been well received, although some voices have been raised in French-speaking Switzerland in favour of English rather than German. Serious problems have arisen, on the other hand, in German-speaking Switzerland as to the early introduction (in 4th or 5th primary grade) of language teaching. Groups of teachers have led the opposition, pointing out the danger that the second language might be used as a selection criterion on transfer to lower secondary level and also stressing that young Swiss-German speakers should first learn "good German" (*Hochdeutsch*) properly. Final policy decisions have recently been taken, some by referendum, in several cantons (Zurich, Glaris, St. Gallen, Thurgau) in favour of early introduction.

Up to the 1980s, only a few individuals, groups of teachers or communes were concerned with computer science in compulsory education, although secondary II and higher vocational education had been interested in the subject for some time. In 1985, the CDIP set up an intercantonal working party on "Computer science in compulsory education", which works in close association with the "Computer science at secondary II level" group, active since 1973. Every two years or so, a meeting, the "Swiss Forum for Computer Science in Education", is held; in 1986, the working party published "Guidelines and Targets for the Introduction of Computer Science in Compulsory Education" for use by the cantons and, in 1987, "Guidelines and Targets for the Introduction of Computer Science in Teacher Training".

The cantons, which all took part in this work, have in some cases already gone further than these recommendations; but, here again, the respective cantonal situations vary appreciably. As to modern teaching aids (software) as a whole, the cantons are really too small to consider doing their own development work or even to evaluate off-the-shelf software for themselves. This has prompted the CDIP to set up a "Centre for Information Technology and Education" in the Educational Film Institute in Berne.

Inspection, supervision and pedagogical organisation

In most cantons, the schools are supervised by full-time inspectors. In certain cantons, inspectors are recruited from the teaching staff to help the district inspectors part-time. The cantons of Zurich and St. Gallen have a special system: the "specialist" inspectors have only a few strictly limited tasks, while general supervision of the schools is entrusted to "laymen" appointed by the local or regional school boards (*Laieninspektorat*).

School management also differs notably from one region to another. As a rule, there is no real "headteacher" in German-speaking Switzerland in compulsory education; when there is, his or her duties are confined to organisation and co-ordination. In French-speaking Switzerland, the situation is rather different and the headmaster's role is much more important.

In the past, inspectors of education and headteachers have been expected to give their backing to educational innovation and to see that any measures introduced complied with cantonal norms. In many cases too, they had to take decisions on pupil advancement. While these duties have not entirely disappeared, the inspectors' role has veered to pedagogical organisation and counselling, in association with other experts.

Pedagogical assistance

In the 1960s, the communes, cantons and regions took steps to support children with learning difficulties, and provide counselling for parents. To this end, they built up a multipurpose social services network. The services on offer can be broken down, roughly, under three headings:

- special classes (induction classes for newly-arrived foreign children, workshop classes for pupils nearing the end of their schooling who have behavioural problems, etc.);
- "ad hoc" courses (support courses, remedial courses, supervised studies, etc.);
- special services (medico-pedagogical, psychological or psychiatric counselling, speech therapy, educational and vocational guidance).

Education of immigrants' children

Around the mid-1960s, Swiss schools found themselves confronted with an entirely new problem: a massive inflow of immigrant workers' children. Nationally, the proportion of foreign children in a class averages about 20 per cent, but it varies enormously from one canton and one commune to another, and in the most extreme cases can be up to 90 per cent. Whereas initially mass immigration came from Italy, in the 1970s Spanish, Yugoslav, Turkish and Portuguese children began to arrive. This faced Switzerland with a new challenge: how to cater for a great many different cultures often very far removed from "Swiss civilisation".

Unsurprisingly, some time elapsed before the cantons were able to adopt an appropriate policy for integrating these children in the education system. From the end of the 1960s, this policy was based on two key concepts: integration and respect for the child's original culture. It was considered that a foreign child must be able to take his or her place in a State school, with the same opportunities and right, as a Swiss child; the idea of "special" schools for foreigners was unanimously rejected because of the dangers inherent in any kind of ghetto. At the same time, the child with a foreign mother tongue is entitled to additional education in his own language and culture.

The cantons based their policies on these premises, with some support from private bodies. In 1985, reiterating and elaborating on views already expressed in 1972, the CDIP adopted recommendations which are now being put into practice in many places. It now remains to improve collaboration between home and host country teachers and raise the linguistic standard of certain foreign teachers. The disproportionate number of foreign pupils in special education, and the fact that many foreign parents tend not to let their children stay on at school also give rise to a good deal of concern.

Special education and support for pupils with learning difficulties

The idea of "educability" disappeared from the statute books in the 1960s, and was replaced by the inalienable right of every child, whatever his disability, to schooling and treatment. The introduction in 1960 of a federal invalidity insurance scheme which contributes towards the treatment and education of the seriously disabled helped significantly to strengthen special education provisions. The number of places available in special classes has risen from 3 000 (1960) to about 17 000. Alongside these classes a number of services are provided: speech therapy, help for dyslexic children and those who find mathematics difficult, physiotheraphy, etc. There are at present in Switzerland no fewer than 1 400 speech therapists (full- or part-time) and about 2 600 teachers specialising in correcting dyslexia.

Special education in summary

	Compulsory education in 1987/88	
	Normal curriculum	Special curriculum
Pupils	665 220	33 160
Total	698 380	
Percentage	95.15	4.75
Female (%)	49	39
Male (%)	51	61
Swiss (%)	83	69
Foreign (%)	17	31
Schools		
Number of children per class	18.5 (15.7-21.8)	8.3 (6.4-15)
State (%)	95	76
Grant-aided private (%)	1	22
Private (%)	4	2

Disabled children attend either boarding schools (homes) or day schools. The aim is to help each individual to take his or her place in society and in the world of work. In some cantons, special education depends not on the Department of Education but on the Health or Social Affairs Department, and this obviously does not make co-ordination with State education and other cantons easy. In both German-speaking and French-speaking Switzerland, pupils with learning difficulties but who are not disabled in the strict sense of the term can attend "support" or "development" classes. These are small groups (six to twelve pupils) taught by specially trained teachers who take the burden off the ordinary schools and provide pupils with special help. Altogether, these classes take 3 to 5 per cent of all primary pupils. A strong tendency has emerged over the last few years not to segregate backward or disabled pupils from the others but, on the contrary, to integrate them in normal classes, while at the same time providing suitable pedagogical support. Now that classes are smaller, it is easier than in the past to give these pupils special attention. Here again, of course, the situation varies from one canton to another and it is hard to say whether there is a general move towards integration.

VOCATIONAL EDUCATION AND TRAINING

The dual system

Vocational training in Switzerland maintains close ties with the working world, since it is essentially on the private sector and individual firms that responsibility for vocational training devolves. The apprentice master takes on youngsters who have completed their basic education until they come of age, and during that time does more than simply teach them a trade.

This system of training, the principle of which dates back to the old trade guilds, has proved sufficiently flexible to survive the structural changes affecting the economy and adapt to big industrial firms and the service sector alike.

Admittedly, it was gradually realised that practical training must be supplemented by theory and a general education which the private firm alone was not able to provide. The dual training and education system has taken shape little by little over more than a century: practical training is acquired in industry under an apprentice master; the theory needed for the occupation is taught in the trade school, alongside general education, gymnastics and sport. To round off the training given on the job, the trade associations run compulsory introductory courses for apprentices systematically to learn basic work techniques, in what is sometimes called the three-pillar training system.

Vocational education comprises one or one and a half days of lessons per week; it may be accompanied by optional classes, which extend it to two days per week. The introductory course usually takes place at the start of the apprenticeship; depending on the occupation, it can vary between a few days and several months. The rest of the training — the bulk of it — is provided on the job by the apprentice master, who has to take the master apprentice training course prescribed by law for this purpose.

Depending on the occupation, an apprenticeship lasts two, three or four years. Once they have completed their compulsory schooling, young people can choose among some 270 trades in industry, crafts, commerce, banking, insurance, transport, hotels and catering, the rest of the service sector and domestic science. Before starting training, the apprentice (or his legal representative) signs an apprenticeship contract with the apprentice master, the content of which must be approved by the cantonal authority responsible for vocational training.

For each occupation, the Federal Department of the Economy (DFEP) lays down regulations on apprenticeship and the final examination. These regulations set out details of the on-the-job training programme and rules on the organisation and marking of the passing-out examination. Furthermore, the Federal Office for Industry, Arts and Crafts and Labour (*Office fédéral de l'industrie, des arts et métiers et du travail*, OFIAMT) publishes a vocational education programme defining the content of the education/training given in the vocational school. The curriculum of the introductory courses for each occupation is decided by the trade association concerned and must be approved by the DFEP.

At the passing-out examination, the apprentice must prove that he has acquired the knowledge and skills needed to practise his trade. If he passes, he is awarded the federal proficiency certificate. In 1987, the success rate was 94 per cent for young women (24 303 passes for 25 873 taking the examination) and 92 per cent for young men (35 338 passes for 38 454 examinees).

According to a survey carried out in the canton of Zurich, about 85 per cent of all apprentices pass the end-of-course examination. Of those who fail, roughly half undertake and successfully complete another apprenticeship.

As distinct from other educational sectors, the cantons have only limited powers as regards vocational training. It is the Confederation that lays down standards for every last detail in this area, awards grants, and oversees enforcement of the law. Nonetheless, the cantons play an important role in that all vocational training tasks, which are a local government and not a Confederation responsibility, fall to the cantons. These tasks mainly concern the supervision and organisation of the apprenticeship and vocational education examinations. The cantons are responsible for enforcing the federal legislation, and Switzerland's federal structure gives them wide discretionary powers for this purpose. In their turn, the cantons delegate certain routine tasks to the communes or other bodies.

In many areas, the cantons carry out their duties in close association with one another. The cantonal vocational training offices, their executive agencies for this purpose, meet as the *Deutschschweizerische Berufsbildungsämter-Konferenz* (DBK) for the German-speaking part of the country and as the *Conférence des offices cantonaux de la formation professionnelle* (CRFP) for the French- and Italian-speaking parts. Through these agencies, the cantons work out agreements on vocational training, as for when a single course is organised for apprentices from several cantons, or trade examinations are standardized intercantonally.

Other forms of vocational training

Training governed by the Federal Vocational Training Act (LFPr)

Most young people trained under the LFPr (*Loi fédérale sur la formation professionnelle*) sign on for an on-the-job apprenticeship. The remaining one-fifth train either *a)* through an apprenticeship in a trade or arts and crafts school providing full-time practical and theoretical training, or *b)* by attending a State or State-approved private business school whose final examinations are recognised by the Confederation.

Each year about 2 600 young people with a mainly practical bent take a basic training course lasting one or two years to acquire the practical skills needed to perform simple jobs in manufacturing industry or elsewhere. In addition to their practical on-the-job training, these young people spend one day a week at special classes which provide basic general education as well as some vocational training.

Basic training in agriculture and forestry

Each year some 8 000 are trained in agricultural occupations, e.g. dairy farming and fruit-growing, wine-growing and wine-making, poultry keeping and looking after horses. This training is regulated by the Federal Agriculture Act. In forestry, the Federal Forestry Surveillance Act governs the training of some 900 foresters and woodcutters.

Basic training in the paramedical professions

Public health, and hence basic training in the non-medical health professions, are a matter for the cantons. However, responsibility for training nurses, dieticians, radiographers and laboratory assistants has been delegated by the cantons to the Swiss Red Cross (CRS). About 10 000 people are currently taking one or other of these two- to three-year Red Cross courses, combining theoretical instruction with hospital practice.

In addition, 4 400 young people are being trained independently of the Red Cross in non-medical health professions following courses organised directly by the cantons or delegated to third parties (doctors' or dentists' organisations, FMH, SSO).

Other basic training

Nearly 8 000 people take business training courses in private schools for between one and three years. About 1 000 foreigners receive training, mainly in the industrial and craft sectors, up to the standards of their own country. Over 3 000 people train for State enterprise or civil service jobs (railways, the post office, customs and police). Nearly 2 600 young people receive artistic training. About 1 000 people are trained in other occupations, mostly connected in some way with the paramedical and artistic professions.

Educational and career guidance

The choice of an occupation after basic education is made after a relatively long period of mature reflection. Several steps have been taken to facilitate this choice: occupational briefing in the terminal classes of compulsory schooling, a year's preparation for the choice of a trade (an academic year, orientation stage, pre-apprenticeship). Pre-employment courses are also organised by the trade associations or by private firms. Career guidance is governed by the Vocational Guidance Act. It is optional and free of charge. Responsibility for organising it lies with the cantons.

Teacher training and further training

The LFPr stipulates that instruction in trade schools must be given by teachers who have had technical and pedagogical training. The Order completing the Act specifically defines the terms of appointment for full-time teachers; in industry and craft trade schools, they must have studied at the Swiss Vocational Teacher Training Institute and passed its exams; to teach in a business school, they must have a university degree.

Part-time teachers have their main occupation outside the school and teach for only a few hours. The full-time/part-time teacher mix is a characteristic of the Swiss trade schools.

The LFPr makes the Swiss Vocational Teacher Training Institute responsible for the training and further training of full-time and part-time teachers. The Institute has training centres in Berne, Lausanne and Lugano for full-time teachers of general and technical subjects in the industry and craft trade schools. The organisation of courses for part-time teachers and of further training courses is decentralised.

The development of vocational training

The first Federal Act on Vocational Training dates from 26 June 1930. It governs training in commerce, transport, the crafts, industry, hotels and catering, and domestic science. The central point of this Act is the distinction it makes between "apprenticeship" (practical training) and "vocational education" (the theory taught in the trade school).

The Vocational Training Act of 20 September 1963 brought in major innovations (introductory courses, training courses for apprentice masters, vocational guidance, etc.).

In 1980, the Federal Act on Vocational Training of 19 April 1978 came into force. It introduced further important changes (compulsory introductory courses, mandatory training courses for apprentice masters, optional courses for apprentices, support courses, etc.).

Trend in the number of apprentices

The following table shows the trend in basic training in the occupations covered by the OFIAMT: it indicates for the years 1960 to 1987 the number of apprenticeship contracts signed, the total number of apprentices and the number of apprenticeship examinations held:

	Apprenticeship examinations	*of which:* girls (%)	Apprenticeship contracts signed during the year	*of which:* girls (%)	Total number of apprentices	*of which:* girls (%)
1960	30 870	31.8	41 003	39.9	110 442	26.1
1965	41 701	30.8	44 930	31.1	131 879	26.1
1979	41 586	30.2	45 582	31.3	128 602	27.2
1975	47 201	32.7	52 438	34.0	145 904	28.8
1980	53 663	37.5	65 359	37.8	173 199	33.1
1985	63 201	38.8	66 000	40.5	187 136	34.8
1986	62 949	39.6	65 896	41.2	186 211	35.6
1987	64 327	40.2	64 169	42.0	183 713	36.4

The table highlights the drop in the number of apprentices and of new apprenticeship contracts since 1986 as a result of the falling birth rate; the proportion of women apprentices shows a slight but steady rise, and it seems that this trend will continue in the coming years.

The Confederation's expenditure on vocational training has risen from SF 8 million in 1930 to SF 342.2 million in 1988 (SF 306.2 million for running costs and 36 million for buildings). Together with investment by the cantons and communes, total public expenditure on vocational training amounted to about SF 1 billion in 1988.

Problems specific to vocational training

The dual system, which places the apprentice "between training and production", has both advantages and disadvantages. The advantages are evident: the apprentice puts what he learns into practice, a sound pedagogical principle. Apprenticeships are availabe everywhere, so young people from regions around the industrial centres can often train not far from their homes.

Another advantage: the supply of apprenticeship places matches the economy's need for trained personnel. Conversely, although it is not possible for all youngsters to take up the career of their dreams, the very great majority of them do find a course which corresponds to their abilities and tastes. This system, in which the number of apprentices in each trade is determined by the interaction of supply and demand, is perhaps one of the main reasons why there is virtually no youth unemployment in Switzerland.

Bringing the apprentice into the working world nevertheless has its dangers; for instance, the apprentice may be too exclusively assigned to production tasks so that his training suffers and his general education is somewhat neglected.

Business and industrial activities are particularly sensitive to the changes in technology which have been so rapid in many areas in the last few years. Training has to be constantly adapted to this ever-changing picture. Since it is very difficult, not to say impossible, to predict the new factors which will change the working world of tomorrow, they cannot be taken into account when training is planned. Any new regulations on vocational training must therefore be made sufficiently open, even if the context changes, to allow for satisfactory training which pays due heed to the latest technological advances. Close collaboration with the various trade associations can ensure that adjustments are made in good time. A middle road has to be found between specialisation and broad-based training: too narrow a specialisation is an obstacle to workers' mobility, while training that is too broadly based loses touch with reality.

Many sectors are currently suffering a serious shortage of qualified manpower, and this situation may worsen in the 1990s owing to the current demographic trend. Special attention must therefore be paid in future to continuing vocational training, notably by increasing the capacity of the ETS (*Ecoles techniques supérieures*) and the ESCEA (*Ecoles supérieures de cadres pour l'économie et l'administration* — management schools) and other high-level professional schools. It is also very important to persuade more women and foreigners to go in for advanced vocational training.

SECOND-CYCLE GENERAL SECONDARY EDUCATION

The *maturité* schools (Gymnasiums or high schools)

Descended from a long tradition dating back to the Middle Ages, the *maturité* schools (Gymnasiums) are the main providers of wide-ranging general education (leading up to the *maturité* school-leaving certificate) and giving access to the university. High school education is still based on the 19th century humanistic ideal. While it has been modernised to some extent to meet the demands of today's society, it is still deeply influenced by the 19th century concepts of Humboldt. The types of education it offers are sharply differentiated while at the same time providing a general education up to the *maturité* (university entrance level); and the image of the high school teacher is that of a specialist in a subject rather than a general teacher or educator.

As a rule, the Swiss Gymnasium school is deliberately very selective. Its standards are high. It is the royal road to university entrance and intends to remain so. This has significant implications for Swiss educational policy since, while all the cantons have high schools, only eight of them have a university. The non-university cantons therefore have a special interest in maintaining national standards which guarantee their students access to higher education.

In practice, however, selection operates in many different ways. While most of the cantons and schools screen pupils at the time of transfer to upper secondary education (end of compulsory education), others leave upper secondary access very open, but are then obliged to weed some pupils out in the course of high school education. A federal regulation — the Order on the Recognition of Maturité Certificates (ORM) — has gone some way towards co-ordinating these conflicting policies.

The ORM recognises five types of high school education: type A: classical (Latin and Greek); type B: modern languages and Latin; type C: mathematics-natural sciences; type D: modern languages; and type E: economics.

In addition to the five types of *maturité* recognised by the Confederation, a very few *maturités* are recognised only at cantonal level in preparation for high-level courses (e.g. the fine arts or the socio-pedagogical *maturités*).

The structure and length of high school education vary considerably depending on the canton, but two main patterns may be distinguished:

- *a)* the traditional *continuous* pattern covering seven or eight years, in which the high school, both structurally and as regards curriculum, forms an integral part of basic compulsory education (3 or 4 years),
- *b)* the *discontinuous* pattern covering three or four years, in which preparation for the *maturité* does not start until basic compulsory education has been completed.

The proportion of high school students in the school population as a whole varies a great deal from one canton to another. In agricultural regions and in those cantons where primary school teachers are trained in teacher training colleges, the number of holders of a *maturité* certificate is much lower than in urban areas and in cantons where teacher training takes place in the university.

Two other observations applicable to the whole country and its regions may also be made: the first is the rising number of *maturité* certificates awarded each year — from 6 440 in 1970 to 12 400 in 1987 — and the second is the steady rise in the proportion of girls among the new alumni: 30 per cent in 1970, 45 per cent in 1987. The number of girls varies enormously according to the type of *maturité*; they are well represented in the language sections, whereas in the mathematics-natural sciences sections the boys easily outnumber them.

In 1968, the ORM, on which for so many decades all the cantonal high schools had based their structure and teaching content, was amended and indeed supplemented in several important respects. This review took place at the end of an initial major period of *maturité* school quantitative and qualitative growth after the Second World War; its main points were: approval of type C education, approval of the alternative (discontinuous) pattern of education and more flexible regulation of the latter. A further review of the ORM in 1972 involved the approval of two new high school courses: type D *maturités* (modern languages) and type E (economics). Then, in 1986, the latest revision of the ORM (for the moment) took place. It has to a certain extent given the cantons more freedom, but it also introduced provisions (for instance, those concerning the third national language and computer science) which, when all is said and done, have nothing much to do with an Outline Order.

In the 1960s, a broad consensus prevailed in Switzerland on the need to reform high school education. In agreement with high school teachers and head teachers, the Swiss Conference of

Cantonal Directors of Education set up a working party whose mandate was to answer the question: "How can we reform our secondary education?" In 1971, the CDIP published the report "Secondary education tomorrow" (*Mittelschule von morgen*, MIMO), the gist of which was to recommend:

> Reorganisation of high school and *maturité* school education: creation of an orientation stage in compulsory education (lower secondary education); high school education proper to start at the end of compulsory basic schooling (from the 10th school year), i.e. in the senior classes of the Gymnasium; division of these senior classes school into two educational cycles of two years each; broadening of the traditional standard subjects thanks to a wider range of choice; redefinition of teaching methods, schoolwork and examinations; an outline plan for a new type of school for the general education of white-collar workers and technicians — the "diploma school". Mandate for an exhaustive study and subsequent realisation of this new type of school.

It has to be said that the publication of the CDIP report was greeted with a marked lack of enthusiasm. The majority of high school teachers and head teachers thought the reform went too far. What was in fact conspicuous by its absence was the will to reach a consensus and to get something done. Instead of a "thorough overhaul reform of secondary education", only fragmentary and superficial changes were made and the proposal to reorganise the *maturité* remained a dead letter.

In 1976, the CDIP instructed its Secondary Education Commission to examine the possibility of reducing the number of types of *maturité* as well as the number of subjects. In 1980, while the report submitted offered no solution, it nonetheless clearly showed the direction that research ought to take. Since 1982, the focus has been on "internal reform". The idea is to work out, with the teachers' help, core curricula for the *maturité* schools to apply throughout the country.

Everyone interested in the development of the *maturité* schools is well aware that new ideological, structural and pedagogical solutions must be found and that the reforms proposed ought to be put into practice.

In fact, the *maturité* subjects have a marked tendency to be "isolationist" and blinkered; the teaching of science in general and the natural sciences in particular is much too specialised; in many areas the amount of knowledge to be acquired has increased considerably; and the subjects taught are so fragmented and disconnected that the pupils find it hard to assimilate and inter-relate them.

Faced with too many subjects that are too dense in content, and sometimes with inadequate teaching, it is hard for today's high school student to think things out for himself — and yet it is vital that in later life he should be able to do so.

The *maturité* schools are now faced with new challenges. Although the authorities are right in usually giving priority to internal school reform, sooner or later the *maturité* schools will nevertheless be obliged to tackle the structural problems. The ORM as it stands is too inflexible. The number of compulsory *maturité* subjects (eleven) is much higher than European norms. The number and specific character of the types of *maturité* impair the flexibility of school organisation. Lastly, the current tendency to shorten basic schooling inevitably brings up the question of how long education ought to last.

This being so, any reform, whether internal or external, will necessarily raise the question of the universities. In particular, how far would they be prepared to organise their own education in the light of the schooling which precedes it?

The diploma schools (*écoles du degré diplôme*, EDD)

Before and immediately after the Second World War, certain cantons and communes established, at upper secondary level, schools of general education with lower standards than the *maturité* schools. They were called diploma schools, schools of general education, tourism schools, administration schools, etc., and their pupils mostly found jobs in the health or educational sectors (e.g. in kindergartens). However, there was not the least uniformity among these different schools as regards structure, curriculum content or even length of course (1 to 3 years after compulsory education). In 1972, an exhaustive study was begun with the idea of promoting throughout Switzerland an autonomous and equivalent type of school, and it took 16 years' work to give this new type of school a standard framework.

There was never any question throughout the political negotiations prior to a consensus of a root-and-branch unification; the idea was, rather, to reach a minimum basis of understanding. This has taken shape today in the "Directives for the approval of diplomas" and the "Core curricula for the EDD".

The diploma schools have filled a gap in the range of educational possibilities at upper secondary level. They are intended for a category of pupils whose proportion has constantly grown over the past 10 to 15 years and their purpose is to give more young people the opportunity to supplement their general education at post-compulsory level. They meet the need for students to learn about all aspects of their future working life (as well as actually training for it, since interest in a subject is a motivation for study); and the need to respond to the expectations of all of those pupils who may not be able or wish to go to high school but who still want a good enough general education to gain access to vocational training in the non-university tertiary sector (usually with a view to pedagogical, paramedical, social, administrative or fine arts careers).

In 1988, Switzerland had 32 diploma schools situated in 19 cantons, with a total of 6 500 pupils.

TEACHER TRAINING

Pre-primary teacher training

Most of the Swiss cantons entrust pre-primary teacher training to secondary II teacher training colleges, some of which require a general education at the same level for entrance (EDD or high school). The professional training itself is then given by a special institute (in Geneva, it is attached to the university). For demographic or educational policy reasons, not all cantons have such an institution, so they sometimes organise training at regional level.

Primary teacher training

Primary teacher training has always been the responsibility of the cantons, which, apart from a few small ones, all have one or more training colleges.

Switzerland has two forms of primary teacher training: teacher training college (secondary II) and the university institute of education after secondary studies culminating in a *maturité* certificate or its equivalent. Over the last 20 years several cantons (Aargau, Jura, Neuchâtel, Ticino, Vaud, Zurich) have dropped the teacher training college in favour of the university. Geneva and Basle, the two city-cantons, have in any case never had any other system. Zurich apart, the majority (thirteen) of cantons in Central and East Swizterland still prefer the teacher training college, as do Berne, Fribourg, Solothurn and Valais.

Secondary I teacher training

The basic training of secondary school teachers is organised at regional level. German-speaking Switzerland has five training institutes, some of which are attached to universities (Basle, Berne, Fribourg and Zurich), in addition to the Graduate Institute of Education at St-Gallen. 35 to 40 per cent of the students enrolled in Berne come from other cantons. Training lasts 7 semesters in Fribourg and St-Gallen, 8 in Basle-city, Berne and Zurich. The certificates awarded by these institutes are recognised by cantons which do not have their own training institutes, sometimes subject to passing further examinations or attending special additional courses organised at cantonal level (Aargau, Lucerne).

In addition to the training available at Berne, French-speaking Switzerland has three university institutes associated with non-university training centres: Geneva, Lausanne and Neuchâtel. The training of teachers for the middle level secondary branch (called the "general" branch or, in German-speaking Switzerland, *Realschule*) takes even more different forms.

Secondary II teacher training

The basic training of high school (Gymnasium) teachers is provided by the universities and the Federal Polytechnic School in Zurich. In Basle, Geneva, Neuchâtel and Vaud canton, non-university institutes of education provide special training and award certificates which are recognised by the other cantons. The CDIP is currently endeavouring to introduce a reform with a view to introducing a degree course matching training more closely to classroom realities; a report has recently been published in this connection.

As regards vocational teacher training, see above.

Other teacher training

In addition to the types of training enumerated above, which concern the great majority of teachers, there are courses for specialist teachers at primary, secondary I and II levels, for teachers of disabled children and adolescents, and for domestic science, physical education and music teachers.

Changes in teacher training

The many different types of education introduced during the post-World War II period brought a corresponding increase in the number of types of teacher training, a tendency exacerbated by Switzerland's federal structure. By the end of the 1960s, teacher training as a whole featured inconsistent courses and goals, compartmentalisation within and among cantons, and differences in the quality of cantonal education systems supposedly of the same level.

Training for secondary II and specialist teachers lacked pedagogical and didactic depth, and there was practically no further training, intercantonal co-operation or mutual recognition of qualifications by the cantons.

Nevertheless, the teacher training institutions maintained high standards which they passed on to their students, and as the teaching profession is highly regarded, recruitment of students was no problem. Although by the late 1950s the weaknesses of the system had already become apparent, the shortage of teachers which, between 1956 and 1974, affected every level and nearly every canton delayed the introduction of reforms. The situation was made worse, moreover, by the arrival at school age of the children born in the baby boom. Day-to-day problems relegated the issue of educational reform to the background.

In 1976, the Conference of Cantonal Directors of Education (CDIP) published a report on "Teacher training tomorrow" (*Lehrerbildung von morgen*, LEMO), the outcome of a long-term study by a group of Swiss experts. Following a broad consultation, the CDIP made recommendations on teacher training. In the context of that time, prime importance was to be attached to the principles laid down in these recommendations:

> Teacher training at all levels should comprise four separate but co-ordinated phases: a general training, a specific training for the educational level aimed at, an on-the-job induction course and, lastly, further training in the context of continuing education; in principle, the teacher training for all levels and types of education should follow the same pattern and take account of changes in society and especially in business and industry.

This prospective study looked at developments in other countries: demands for better science education, for the updating and improvement of training to meet current needs, for closer links between theory and practice. It took a very cautious view and its main purpose was to prepare the ground and determine a number of common aims. Since then, the research has continued in a "Teacher training" working party which has published several reports and, since 1988, has concentrated on two themes: the qualifications required by instructors who are to train students to teach specific subjects, and continuing training for teachers.

Few cantons avoided the reforming drive that affected nearly every educational level in the wake of the LEMO report. The end of the teacher shortage also created propitious circumstances for the taking of policy decisions in this connection.

The association of teacher training and university courses has raised scientific and cultural standards among teachers, and a consensus at national level among the authorities and those responsible for training as to the aims to be pursued has brought about an improvement in the quality of training, which in itself should help ensure equivalence of standards.

But two things still remain to be done. First, a strategy for the general reform of teacher training at all levels needs to be established and applied in the cantons (such a plan has recently been put forward in the Berne canton) or at regional level. And second, instructor training, which is still practically non-existent, has to be developed.

Differences in cantonal teacher training and recruitment practices are bound to affect job opportunities and free movement, because of teaching permit requirements. This is notably the case in compulsory education, since schools can generally only select applicants for recruitment who have a diploma awarded in the same canton or recognised by it. Some cantons have signed bilateral or multilateral agreements on the free movement of their teachers. Efforts are now being made to extend this freedom of movement to the whole country, though they are once again impeded by wide disparities between the employment conditions and pay of teachers in the different cantons.

As regards the outlook for teacher training, there can be no doubt that the fundamental discussion set out in the LEMO prospective study in 1976 and in later work will continue to leave its mark on the education system in Switzerland. Nevertheless, certain ideas and proposals ought to be reconsidered in the light of experience over the past ten years. This is especially the case for comprehensive primary education and the system of specialist training for secondary I teachers. At the same time, it will be very important, for the introduction of the reforms planned, to define the scope of high school teacher training. The debate should also consider the structural problems.

For instance, it will be necessary to see whether the university structure can continue to provide teacher training at this level and whether it is advisable to retain the teacher training college for primary school teachers.

The recruitment and selection of would-be teachers should also be reviewed; in this connection, the possibility of facilitating access to teacher training for adults with experience of another profession should be considered.

Support for young teachers should also be redefined, while the impact of the growing feminisation of certain categories of teachers over the last twenty years should be studied, since it is now felt that the contribution of both sexes is essential for the full development of pupils.

The importance of in-service training for teachers has been widely recognised throughout the country. The cantons have made a heavy investment in human and financial resources. However, such training still too often takes the form of a disjointed and episodic programme of lectures, with a far too fragmented approach to the different subjects and branches.

Lastly, some gaps remain to be filled in the network of institutions responsible for the initial and in-service training of teacher trainers. In any event, the approach can only be regional or intercantonal; and prospective research will be needed to guarantee comparable training.

HIGHER (POST-SECONDARY) EDUCATION

Post-secondary education includes the university-level "hautes écoles" (or *Hochschulen*) and non-university institutions such as the ETS engineering schools, the higher teacher training colleges and other higher professional training institutions. The doors to these institutions are opened by the qualifications obtained either in upper secondary studies (notably the *maturité* certificate and its equivalents such as the *brevets d'enseignement*) or an approved trade apprenticeship. But post-secondary education is not based on any universal concept established at national level and it is well nigh impossible to sum it up briefly.

It should be pointed out, however, that Switzerland has remained aloof from the tendency emerging in neighbouring countries to give the university the monopoly for teacher and specialised training. It has in fact built up the universities and the higher non-university professional schools side by side but without integrating them.

The entire post-secondary sector has expanded considerably over the past quarter of a century. This expansion has been more sustained outside the universities than within them, and although there has been a more pronounced rise in the number of women students than in that of their male colleagues, the proportion of women is still on the whole small.

The "hautes écoles"

These higher education institutions include the two federal polytechnic schools in Zurich and Lausanne and the seven cantonal universities of Basle, Berne, Geneva, Fribourg, Lausanne, Neuchâtel and Zurich. There are also the School of Higher Social and Economic Studies at St-Gallen and the Faculty of Catholic Theology in Lucerne.

A distinguishing feature of these schools is that they closely combine research and teaching. They have official status since they depend on the federal or cantonal authorities, but their administrative autonomy is quite extensive, albeit varying from case to case.

These schools all date from before the Second World War. During the period of economic prosperity in the 1960s and 1970s, conducive to concern for education, the cantons of Lucerne, Aargau and Ticino considered setting up their own university institutions. But proposals to do so were rejected by referendum and have remained a dead letter. Notwithstanding this setback, and perhaps even because of it, the existing university institutions flourished, with a concomitant substantial increase in enrolments and expenditure. After an initial stable period, student numbers (16 000 in 1950) began to rise sharply as from 1957 to 32 800 by 1965. Thereafter, the growth rate remained steady and student numbers rose from 52 600 in 1975 to 74 800 in 1985 and 78 500 in 1987/88. This remarkably fast rise was not unconnected with the high birth rate in the 1960s, though even now fewer than 10 per cent of all 20-year-olds go in for higher studies. During the period considered, expenditure has increased almost tenfold in nominal terms, from SF 312 million in 1965 to 2 464 billion (face value) in 1985.

This expansion was largely due to the rise in the number of female students. Whereas in the 1960s women accounted for barely 20 per cent of total student numbers, this proportion rose to 25 per cent by 1975 and 36 per cent by 1987, though it varies appreciably according to faculty (50 per cent in the human and social sciences, over 40 per cent in medicine, but only 10 to 20 per cent in the natural sciences and technology).

Foreign students account for nearly 18 per cent of the total student population and the Swiss universities stand up well to international comparison in this respect.

University policy has been marked for the last quarter of a century by the debate on:

- how far expansion should go;
- how much support should be given by the Confederation and by the non-university cantons;
- how to set terms of entrance so as to avoid having to impose a *numerus clausus*; and
- co-ordination between institutes of higher learning and the communities responsible for them.

In the early 1960s expert surveys concluded that the need for expansion was so great that the resources of the university cantons clearly could not suffice to meet it. The Federal University Assistance Act laid the foundations for federal aid, setting up an arrangement for systematic development of the *hautes écoles* and a procedure for co-operation between the responsible communities.

Federal aid takes two forms:

- basic grants towards approved institutions' operating costs are paid annually for the following academic year; their average basic rate has been slightly reduced and currently amounts to 16 per cent of expenditure;
- capital grants for specific projects. Their level depends on the financial capacity of the university canton concerned and they cover between 35 and 60 per cent of the investment involved.

The current review of the Federal University Assistance Act is intended to simplify the administrative procedure, improve co-ordination and pinpoint cost-sharing more precisely.

Apart from Lucerne, with its Faculty of Catholic Theology, only eight cantons out of the 26 in the Confederation have a university, fully-fledged or otherwise. This creates two problems: funding, and equal access to the cantonal universities for students from the non-university cantons. Admittedly, only a third of all Swiss students come from the 18 non-university cantons.

Nonetheless, the university cantons do render the others a considerable service. The problem has become worse owing to the failure of the proposals to set up new institutions (Aargau, Lucerne and Ticino) and the substantial rise in student numbers and costs.

Due to these circumstances and to intense political activity, an initial intercantonal agreement on participation in university funding was reached in 1979, whereby the university cantons guaranteed students or would-be students from the other cantons the same rights as the students of their own canton. In exchange, the non-university cantons agreed to contribute to the funding of the universities.

The future outlook can be summed up as follows:

- Student numbers may now be expected to level off. The university institutions will be able to concentrate on internal development plans and on introducing new courses, notably in computer science and ecology.
- The *hautes écoles* will no longer be able to overlook their growing involvement in responsibility for the continuing training of their graduates. Post-graduate courses will have to be introduced and easy-to-follow forms of continuing training organised both for academics and for the general public.
- At the same time, it is generally agreed that academic mobility — of teachers and students — must be improved. The bodies responsible for the universities will have to negotiate formal agreements on the equivalence of periods of study and examinations. Freer academic movement in Switzerland is also a necessary step towards encouraging academic exchanges with other European countries and the world at large.
- Another urgent task will be to put an end to the tendency for studies to become longer. In Switzerland as in some other countries, young people who go in for university-level studies do not enter working life until they are 25 to 30 years old. While the relatively late start of compulsory schooling and the length of secondary studies leading up to the *maturité* examinations are partly to blame for this, it is above all the length of university study, already extended several times in the past twenty or thirty years, which is the real cause. Now, when continuing and lifelong education and training are the order of the day, initial university education leading to degrees and diplomas must be kept to the strict minimum.

While it is probable that Switzerland will be in no hurry to lift the barrage to university entrance of the recognised *maturité* certificate requirement, in certain disciplines, entrance procedures for applicants qualified in some other way ought to be made more flexible. At the same time, the universities should accept closer co-operation, in teaching and research, with professional schools of comparable level. One last question: should the high school (*Gymnasium*) be opened up in order to meet the growing demand for higher general education and for a new generation of qualified science and research workers? Educational levels in Switzerland are trailing behind those of neighbouring countries and must be raised. This remark mainly concerns those cantons in which the number of *bacheliers* is below, and well below, the national average.

Higher professional education

Since the 1960s, higher professional education has also expanded considerably, like the universities. As in teacher training, Switzerland has been able to avoid this education to become part of the university domain. Indeed, higher professional courses, though not part of the university system, are of exceptional quality. Most of them, too, are covered by the Federal Vocational Training Act.

There are two ways of achieving the target set by this Act:

- institutions of higher education, usually officially recognised, provide courses organised according to the minimum requirements laid down by the Confederation;
- candidates sit trade and higher professional examinations to demonstrate their level of attainment. Preparation for these examinations is usually in private institutions.

The ETS (*Ecoles techniques supérieures*) train engineers, architects, ETS chemists and other qualified professionals. Length of studies: six semesters full-time or seven semesters part-time (or in evening classes). The entrance requirement is a federal proficiency certificate obtained subsequent to a three- or four-year apprenticeship, or a technical *baccalauréat*, or a *maturité* certificate plus at least twelve months' on-the-job training. The courses are approved by the Confederation, which subsidises the institutions concerned. There are 15 full-time ETS schools and 10 part-time or evening schools whose students have a part-time paid job.

The full-time ETS schools are usually run by one or more cantons, while the part-time schools often depend on trade associations.

These schools now play a key role in higher technical training. They award nearly 1 700 diplomas a year, three times as many as the two federal polytechnic schools in Zurich and Lausanne put together, and in similar areas.

For some years, the ETS schools have been stepping up provision for post-graduate and continuing training, and more readily accepting research and development assignments. In 1987/88, some 550 ETS engineers went in for post-graduate studies, especially in electronics, management and energy technology.

Technical schools provide practical courses for middle level employment. In 1987/88, about 3 300 students attended one or other of these 37 institutions for a course of at least 2 000 hours, full- or part-time. The curriculum includes general and basic education as well as more specialised vocational training. The technical schools currently offer a choice of 32 specialisations.

The schools of higher education for business and administration (ESCEA) provide training for management. Entrance requirements: a federal proficiency certificate in commerce or a diploma from a higher school of commerce. Length of studies: 6 semesters full-time or 8-10 semesters part-time (in-service training).

Some 1 300 students are at present studying at one of the ESCEAs to acquire the sound knowledge of economics and general education needed for a management post in business or administration.

Ten ESCEAs have been created over the last 20 years. New schools are being set up in the cantons of Grisons, Valais and Schaffhausen. These schools generally depend on the cantons but are approved and supported by the Confederation. They also provide post-diploma and continuing training.

Other post-secondary institutions in Swtizerland include:

- five higher schools of arts and crafts and fine arts, which provide courses comprising at least 4 200 periods of instruction: industrial design, jewellery-making, interior decoration, visual art, restoration of works of arts and ceramics;
- three higher schools of domestic science, which offer training in housekeeping;
- under a regulation which came into force in 1987, the higher schools of tourism and hotels and catering, which train qualified staff for these occupations;
- four ETS schools which provide specialised training in rural economics, horticulture, arboriculture, vine-growing and wine-making;
- ten schools of social studies and fifteen schools of special education for students with a

secondary II diploma or an initial trade qualification who wish to qualify for special education or social work. Most of these are private institutions and their funding, mainly from very high fees and government grants, is no easy matter. Usually approved at cantonal level, their place in the education system is unclear. In some cantons, they depend not on the education authorities but on the social affairs department.

Trade and professional associations hold Confederation-approved examinations: basic examinations to assess qualification for supervisory posts or occupations calling for a higher level of training than apprenticeship, and higher examinations to assess qualification for senior positions, e.g. as head of a firm. Successful candidates are awarded a federal diploma recognised in law.

Like technical and management training, artistic studies have not so far been entrusted to the university, which does, however, offer certain relevant science courses. Practical training of musicians, dancers and practitioners of arts and crafts generally takes place in specialist secondary or post-secondary institutions.

Musical education is the prerogative of a score or so of conservatoires and academies of music. Eight specialised schools provide training in arts and crafts.

There are also drama and ballet schools, but none as yet for the cinema. As a rule, the status of these specialised schools does not facilitate recognition of their diplomas by other professional institutions abroad.

The Federal School of Sport, in Macolin, is the only institution to train sports instructors and trainers, though PE teachers can also train at certain *hautes écoles*.

4. FUTURE OUTLOOK

Assignment and objectives of the education system

Any consideration of the future outlook must necessarily take as its point of reference the definition of the assignment and objectives of the education system. The assignment is twofold: to equip young people with occupational skills and foster their intellectual and human qualities so that they can lead meaningful lives and fit happily into society.

The two elements of this assignment — general education and vocational training — are of equal worth and will still be just as important at the turn of the century.

The literature regularly comes up with a constant: the profile of the economic actors of tomorrow, who will need:

1. A sound basic education, including mastery of essential skills such as reading and writing.
2. A good basic vocational training so as to be able to cope with the upheavals of our times.
3. Ability to go on learning.
4. Ability to see all sides of a question (one-dimensional causal reasoning giving way to all-round thinking).
5. Ability to solve problems and take decisions.
6. Ability to work in a team.

This probably Utopian ideal imposes certain basic educational objectives. The main ones, in random order, are to encourage pupils:

1. To think for themselves.
2. To experiment.
3. To learn more about the arts.
4. To take initiatives and be efficient.
5. To develop moral strength.
6. To fit into society.
7. To be self-confident.
8. To take responsibility.
9. To take a positive rather than a negative view.

Far from being the private preserve of the politicians, achieving these aims is everyone's business — pupils and students, parents, teachers and researchers. The first task of the politicians, on the other hand, is to establish the best possible conditions for achieving these objectives and, in particular, to ease access to educational institutions with these aims in view.

The future

The authorities, and all concerned, acknowledge the importance of building up the education and training system in Switzerland. The present report bears witness to this. Changes in society and technology, and fierce international competition, are bringing new challenges. Will the existing structures and traditional educational content be able to meet them?

Though there is probably little scope, in Switzerland's decentralised and very pragmatic education system, for overall strategies and a wide perspective, the CDIP, the Confederation or the University Conference have taken care not to neglect consideration of future prospects or outlining a comprehensive educational policy. Indeed, the CDIP is currently working on a major project concerning training for tomorrow (BICHMO Project).

The following are some of the main elements of the debate:

Education for all

The Swiss education system guarantees free access to educational institutions, not only in theory but in practice, as evidenced by the marked rise in the number of schoolchildren and students, the expansion and decentralisation of education/training establishments and the country's general prosperity. The basic education described above is provided in every region and is accessible to every social class.

Improvements must be made to the scholarship award system, which is still underdeveloped in certain cantons and on the whole unco-ordinated. At the same time, certain legal and administrative obstacles persist and hamper access to educational institutions outside a student's home canton. Furthermore, intercantonal mobility is often impaired by pointless constraints.

Women are still under-represented in many areas of training. Special incentives are needed if equal opportunities are to be provided and the demands of society and business met.

The same applies to foreigners, especially the children of immigrant workers.

Establishment of a system of lifelong education/training

The principle of lifelong education/training for work or other ends is widely accepted. What is less evident is the role which will devolve on the authorities, whose responsibility was hitherto confined to basic education — which will no doubt remain their main concern.

The authorities will also have to go on supporting continuing training, which is already quite well organised in certain industries. Compulsory education now has to adjust to the new circumstances and focus (without being lengthened) on the acquisition of basic knowledge and skills.

Switzerland can hardly be expected to produce a system of credits in the strict sense since proposals along these lines prompt so many fears of excessive centralisation and bureaucracy. It is felt, however, that adult education, associated with sandwich courses —which have proved their worth notably in vocational training — might be an acceptable alternative for certain industries, with public and private help.

A more coherent educational policy

The economic prosperity of the 1960s permitted a new departure with the introduction of a co-ordinating structure for educational policy at national level. But the decentralised pattern of the system of alternating training/employment, whose excellence needs no further demonstration, have been retained, even though co-operation at the employment and policy-making levels has been introduced. This co-operation must be strengthened in order to make the whole education system more coherent. To facilitate mobility, class levels and streams must be standardized (vertical co-ordination) and cantonal education systems harmonized (horizontal co-ordination). It is up to the cantons, which are mainly responsible for education, to bring about these changes, though the Confederation will be involved too because of its supporting role in vocational training and co-responsibility for higher education and science policy.

Three tasks, among others, are clearly urgent:

- to strike a new balance between general and vocational education;
- to establish clear responsibilities in those areas of vocational training which elude federal supervision, and, lastly;
- to decide jointly who is to do what in the area of artistic education.

Innovation and educational reform

The education system is not unlike the economy in that when all is going well, no one wants to make changes or have to adjust to innovations or reforms! Moreover, because teaching and education are ongoing processes, their content and methods must not be wilfully changed.

Despite disenchantment with many recent reform projects, schools must always be able to innovate. The federal system once again lays the responsibility for this on the cantons which must, like the regions and the CDIP, endeavour to make sure that unexpected problems are spotted early on. However, experience with computer science and the — new — field of telecommunications casts some doubts as to whether this is so. The problems of reform are immediately apparent, for example in the high school — which has great difficulty in complying with the objectives of interdisciplinary education. The national plan to define systems of reference and, as necessary, to alter the criteria for recognition should undoubtedly prove useful. As for training in new fields, existing rules on apprenticeship should be updated without waiting for the profile of the activity concerned to emerge in its final form.

International co-operation

Swiss education policy-makers are nowadays prepared to engage in exchanges of information and co-operation at international level. They have in any case for years now taken an active part in specific Council of Europe, OECD and UNESCO projects as well as maintaining many bilateral contacts, even though the structure of a federal State necessarily imposes a certain reserve as regards external cultural policy.

However, the driving force of the European Community and the idea of the benefits to be gained from international co-operation are fostering a more open attitude. There is thus every reason to believe that Switzerland, one of the latest arrivals in the Council of Europe, will sign the agreements on education very shortly. In doing so, it will undertake in particular to promote the mobility of students and academics and to take an active part in international programmes on research and free movement.

5. THE SIX CANTONS REVIEWED

It was not conceivable — though it would have been the only way to give an exact picture of educational policy in Switzerland — to subject all 26 cantons to the OECD review. Six were therefore selected: Zurich, Uri, Aargau, Ticino, Valais and Neuchâtel. This choice should give a relatively variegated and exact picture of the country, where resemblances and differences as regards area, language, material wealth, economic development and educational policy stand out quite sharply. The data and the remarks which follow are intended merely as a brief summary of the situation, highlighting some of the main features in each canton.

EDUCATION IN THE CANTON OF ZURICH

The country's economic and commercial metropolis, the canton of Zurich has since the last half of the 19th century built up a very efficient education system which is largely responsible for its present prosperity.

The bodies responsible for education in Zurich have certain special features. The Education Council (consisting of 2 Members of Parliament and 2 teachers' representatives, and chaired by the Head of the Education Department) plays an all-important role. The communes are mainly responsible for compulsory education and in each commune the School Board (elected by the local population from non-teachers) is in charge of appointments, school building and the supervision of teachers. The communal or district schools have no head teacher but an administrator. Throughout the Zurich system, the teachers have a very big say in the organisation of education and in all decisions concerning the school.

Problems and future developments likely to affect teachers in the various educational sectors

Since a 1984 referendum, it is the communes which are mainly responsible for *pre-primary education*. This decentralisation gives the authorities considerable elbow-room, and certain communes have changed the old structures and adopted new arrangements: five-day week, shorter teaching periods for the youngest children, teaching in tandem, etc. Attention is also being paid to one-to-one help for "problem" children.

General facts and figures concerning the six cantons reviewed

	Zurich	Uri	Aargau	Ticino	Valais	Neuchâtel	Switzerland
1. *History/geography/population*							
Joined the Confederation in	1351	1291	1803	1803	1815	1815	. .
Area (km²)	1 729	1 076	1 405	2 811	5 226	797	41 293
Number of communes	171	20	232	247	163	62	3 022
Resident population ('000)	1 142.6	33.8	484.0	284.4	245.0	158.3	6 668.5
of which: Foreigners (%)	17.7	7.1	14.9	25.1	14.4	19.1	16.4
Population density (No. of inhabitants/km²)	664	31	345	101	47	199	161
Mother tongue (% according to 1980 census)							
— French	1.7	0.3	1.0	1.9	60.0	77.1	15.9
— German	82.9	93.3	85.6	11.1	32.1	8.0	67.1
— Italian	8.0	3.3	7.4	83.9	4.8	8.8	10.1
— Romansh	0.5	0.3	0.2	0.2	0.1	0.1	0.8
— Other	6.9	2.8	5.8	2.9	3.0	6.0	6.1
2. *Economy/standard of living*							
Working population ('000)	689.3	15.9	239.8	167.4	125.4	81.0	3 572.3
As % of total population	60.3	47.0	49.5	58.9	51.2	51.2	53.6
Foreign labour ('000)	139.9	1.6	49.8	78.2	25.9	21.4	815.6
As % of total working population	20.3	10.1	20.8	46.7	20.6	26.4	22.8
Fully unemployed, number	2 574	8	962	2 367	1 117	1 509	22 249
As % of total working population	0.4	0.05	0.4	1.4	0.9	1.9	0.6
% employment according to economic sector (1985 figures)							
— Primary	2.9	10.2	6.1	3.3	11.2	5.0	6.3
— Secondary	34.5	45.8	50.8	39.1	35.6	48.1	38.9
— Tertiary	62.6	44.0	43.1	57.6	53.2	46.9	54.8
National income (SF mill.)	50 774	937	16 747	8 468	6 933	4 892	239 000
Per capita national income (SF)	44 205	27 722	34 601	29 740	28 298	30 806	35 840
Number of enterprises	41 259	854	12 716	16 598	9 530	5 455	251 112
Receipts/expenditure surplus (SF mill.)	+ 130.0	+ 1.9	+ 115.1	+ 149.3	+ 28.7	+ 1.7	. .
Tax payable (%)							
— For an income of SF 30 000	4.7	6.8	6.3	5.3	6.9	5.9	6.1
— For an income of SF 100 000	15.8	17.7	18.7	20.6	19.4	20.3	18.6
— For SF 100 000 capital (‰)	. .	3.8	0.7	1.3	2.2	1.3	1.5
— For SF 1 million capital (‰)	2.7	7.7	5.5	4.6	5.2	6.8	4.8

Data specifically concerning education and training (1987/88 figures)

	Zurich	Uri	Aargau	Ticino	Valais	Neuchâtel	Switzerland
Pre-primary	24 460	492	11 539	6 645	5 581	1 791	132 879
Primary education							
Pupils	64 788	2 764	27 553	13 873	18 164	8 496	375 302
Classes	21 151	145	1 341	739	1 018	487	21 151
Single-level classes	16 403	112	1 054	573	769	408	16 409
Streamed classes	4 742	33	287	166	249	79	4 742
Length of primary education (years)	6	6	5	5	6	5	. .
Average pupil/class ratio	19.2	19.1	20.4	18.0	17.5	17.4	18.7
Secondary I education							
Pupils	36 597	1 534	22 993	13 594	10 594	7 324	289 918
Classes	2 035	19	1 260	629	549	364	13 171
Average pupil/class ratio	16.5	16.9	18.1	19.9	18.5	19.9	18.2
Special education							
Pupils	5 702	143	3 086	415	635	690	33 160
Classes	720	18	340	65	90	86	4 006
Average pupil/class ratio	7.9	7.9	9.1	6.4	7.1	8.0	8.3
Total compulsory education	107 087	4 441	53 632	27 882	29 564	16 510	698 380
Secondary II education							
Pupils	52 426	1 079	19 815	14 013	13 011	7 787	313 594
of which:							
— *Maturité* schools	8 569	192	2 690	4 226	2 638	1 783	52 247
— Diploma schools (EDD)	788	. .	179	338	147	299	6 224
— Other general secondary schools	389	. .	271	124	314	370	6 410
— Teacher training	406	44	338	. .	294	15	8 108
1985 *maturité* success rate	13.5	7.9	10.1	15.1	13.1	16.2	11.9
% [18 year-olds] (1970)	(8.0)	(2.8)	(4.9)	(8.2)	(9.9)	(12.1)	(7.2)
Vocational education	41 799	843	16 039	9 325	9 499	5 311	237 865
Basic vocational education	466	. .	298	. .	119	9	2 740
Third-level education							
— Non-university students	12 861	18	2 052	455	692	850	43 220
— University students	30 040	. .	. .	. .	. .	2 351	78 473
Other education undefinable by level	1 193	. .	. .	400	399	43	6 120

At *primary school* level, work has begun on reviewing the curriculum, implementing (through teacher training) the introduction of French teaching from primary 5th grade, teaching handicrafts to boys and girls together, and experiments with new forms of organisation (continuous school day with shorter lunch break, five-day week, grouped teaching periods, etc.).

Zurich canton is one of those which differentiate their education at *secondary I* level most (four streams: junior *Gymnasium* (high school), higher-level secondary section, general section, practical section). At present, however, many communes are finding it difficult to keep up their three sections (falling enrolments) and a much more flexible structure will have to be found; experiments in pupil grouping have given good results in this respect. Lastly, a more flexible organisation of secondary I should lead to a more flexible core curriculum.

Children with personal or social, intellectual or physical difficulties have for many years benefitted from a threefold support system in the form of compensatory activities, special classes and special schools. The current problems are as follows: a widespread need for one-to-one support, high specialisation of educational options at a time when enrolments are falling and special education which is often too unrelated to the ordinary education system.

The schools at *secondary II* level (apart from a few private institutions) are cantonal schools which fall into the *maturité* and "diploma" school categories. Zurich also has a "Cantonal *Maturité* School for Adults" which caters for people who have completed a vocational training course and want to go on to study at the university. Current problems at secondary II level include: the shifting of the start of the academic year from Spring to Autumn, as well as the length of secondary education in the context of the introduction of the five-day week (a referendum has been tabled) and the threat to teacher employment due to falling pupil numbers.

For *vocational training*, Zurich, with its 30 183 young people on training courses, is clearly a major centre. Furthermore, the importance attached to adult education (basic vocational, further, continuing training) and the very wide range of higher training institutions (engineering schools, Institute of Applied Psychology, School of Social Studies, Academy of Music, ESCEA, School of Decorative Arts, Swiss Hotel School, etc.) give it a wide influence. Among current problems, the lack of enterprise training in high-tech industry is very worrying, as is the absence of training for drop-outs and less bright youngsters.

Teacher training in Zurich is a highly developed system. It gives full satisfaction and raises no special problems other than those found everywhere concerning the links between theory and practice, selection of applicants, support for new teachers, etc.

The *University of Zurich*, founded in 1833, accounts, with its 20 145 students, for about a quarter of all students in higher education in Switzerland. The rapid and considerable growth of this university has had certain consequences. While teaching and research conditions are deteriorating for want of an increase in funds, the university is called on more and more to contribute to solving problems affecting society (ecology, ethics, further education, etc.). Among other things, this would require a corresponding expansion of the more prized courses and the opening up of the university in many directions (post-graduate studies, advanced training, promotion of contacts and transfers of knowledge, sponsorships, etc.).

To sum up, while the education system in Zurich appears to be satisfactory, this does not mean that it does not face certain major challenges: the promotion of "good German" to counter the advance of dialect speaking, the integration of foreign children (numbering one in five) by means of truly intercultural education, the introduction of computer science, educating pupils for democracy and citizenship, and improving the vocational training system, especially in the services sector.

EDUCATION IN THE CANTON OF URI

A small mountain canton in the middle of Switzerland, Uri – St Gotthard country – has about 35 000 inhabitants, three-quarters of whom live in its capital and the neighbouring area; it is one of the poorer Swiss cantons and has to carry a heavy tax burden.

Overall responsibility for education at cantonal level falls to the Director of Education (a cantonal official) assisted by an Advisory Board, the Education Council. The communes are responsible for pre-primary and compulsory education; in each commune a School Board deals with administrative matters (appointment of teachers, in particular); the district schools (secondary I level) are administered by a District Board made up of representatives of the communes.

The canton of Uri is not in a position to offer a full range of courses, notably in the post-secondary sector. It must therefore resort in many cases to intercantonal co-operation agreements (with the ETS schools in Lucerne, the agricultural college in Zollikofen, the Central Switzerland School of Administration, etc.). Active co-operation also takes place with respect to university counselling, teaching resources and educational R&D.

Side by side with the usual *pre-primary schools*, the canton of Uri introduced about ten years ago a mobile kindergarten scheme. When a commune cannot run its own nursery school because there are too few children, or journeys between home and school are difficult, or for lack of funds, a teacher visits it one day a week, and endeavours to set up activity groups, run by parents, to carry on during the rest of the week with the work begun in class. Four communes have opted for this system.

Primary education lasts six years. To meet the needs of the valley populations who live from June to September in the higher mountain pastures, communes can choose one of three ways of organising school attendance over the year:

a) 370 to 380 half-days per year
b) 345 to 370 half-days per year
c) 330 to 345 half-days per year.

In the communes opting for *b)* or *c)*, weekly school hours will obviously have to be longer than in the others.

Moving up from primary to *secondary I* level hitherto depended on a final examination which also determined the stream pupils were to enter. It was decided to abolish this examination as from 1989/90 and to introduce a new procedure, based on performance in primary school, the teacher's opinion and interviews with parents and the pupil. Like that of Zurich, the education system in Uri has four streams at secondary I level (junior , higher-level secondary, general and practical).

For *secondary II*, Uri canton has opened a cantonal upper secondary school in Altdorf with the following streams: *Gymnasium*, teacher training college, higher school of commerce and an additional tenth year. Because of its geographical relief, the canton has had to take certain steps to make attendance at this school possible for all: boarding (albeit in the balance), suitable transport facilities, scholarship grants. Independent up to 1985, the teacher training college has been legally and structurally integrated into the cantonal school. Many voices are now being raised in favour of teacher training through the *Gymnasium*.

At present, 730 young people are taking an apprenticeship or attending a trade school in Uri canton; a further 400 or so go to a trade school or attend special courses outside the canton.

Since average per capita income in Uri canton is rather low compared with the other cantons and no higher training/education can be provided, a well organised scholarship scheme has to operate. In 1987, this cost an average of SF 48 per head of the population (national average: SF 31, the Uri average being the second highest in Switzerland); and 1.03 per cent of the canton's population was in receipt of a grant (national average: 0.79 per cent).

EDUCATION IN THE CANTON OF AARGAU

Responsibility for compulsory education in Aargau is a matter for the communes or intercommunal groups, which also run the kindergartens. They are assisted by the canton, which runs the secondary II schools and the teacher training colleges and promotes adult vocational training and education. The creation of an institute for the educational sciences was rejected in 1979, but the canton runs four post-secondary schools: the ETS engineering school at Brugg-Windisch, the instructors school at Brugg, the Swiss School of Building (Aarau) and the Higher Business Management and Administration School at Olten, jointly with the canton of Solothurn.

In the communes, the School Board, appointed by the citizens, plays an important role (supervision of teaching, school administration and building, admissions, decisions on whether pupils should pass up or stay down, complaints, etc.).

Compulsory education comprises *primary school* (five years) and *secondary I* school (four years). Moving up from one level to another and streaming at secondary I level are based on a recommendation by the class teacher (the idea of a "cut-off examination" being considered unacceptable) in consultation with parents. The secondary I streams are the same as in Uri and Zurich.

Since 1981, Aargau canton has been embarked on a large-scale educational reform project (adaptation of curricula, new teaching facilities) based on a few key principles: teaching related to real life, comprehensive and interdisciplinary, dynamic and personalised. The reforms have mainly concerned mathematics, modern languages, textiles handicrafts and home economics. The early introduction of French in primary school has been (provisionally) postponed.

At *secondary II* level, Aargau canton runs six decentralised cantonal schools and, in addition to the five types of *maturité* recognised at federal level and the commerce and general education diplomas, offers a cantonal socio-pedagogic *maturité*. The socio-pedagogic *Gymnasium* prepares pupils for social work or teaching or for further studies. Courses are based on the credit system and the teaching is interdisciplinary. The active teaching methods practised will also be used by the students when they themselves become teachers later on; the socio-pedagogic *Gymnasium* also provides a wide choice of mandatory and optional artistic courses.

The problems currently arising at this level concern curricular review for the *maturité* schools, the possible opening of a cantonal school in Fricktal (pupils from this region go to schools in Basle at present) and the possible creation of a cantonal *Gymnasium* for adults.

Teacher training currently lasts four semesters after the (federal or cantonal socio-pedagogic) *maturité*. It was planned in 1990 to open the teaching training centre to professionals from other walks of life, who will be able to take a three-semester course. For secondary I, Aargau has set up a special institute for post-graduate training (one year, after at least six university semesters).

Where *vocational training* is concerned, Aargau canton attaches much importance to the preparatory phase to the choice of a trade. *Vocational guidance* during the last years of compulsory education is therefore well organised; before taking up an apprenticeship, certain pupils can take a tenth "socio-economic induction" year, and a list of available apprenticeship places is issued by the canton four times a year.

Currently 14 500 young people are taking *a basic vocational training*. Of the 300 apprenticeships on offer, about 200 worked in Aargau — a fair reflection of the canton's economic structure. Two special features might also be mentioned: apprentice workshops, which provide both theoretical and practical training (horticulture, clothing manufacture); and the "ABB training model" (ABB = Asea Brown Boveri). After following a two-year common-core course at the ABB company's apprenticeship centre, apprentices spend two more years on production. This is an extended training model which endeavours to give trainees the mobility demanded by industry.

EDUCATION IN THE CANTON OF TICINO

Both a canton and a separate linguistic region, since Italian is spoken there, Ticino has experienced a period of constant and progressive educational expansion since the entry into force of its 1958 Education Act. The pace of this expansion has speeded up over the past 15 years and the opening of new schools, the renewal of logistic and equipment infrastructures, the constant updating of curricula, the intensification of research and experiment, and the openings for teachers and pupils have had a substantial impact on public expenditure. Structural reforms have been even more far-reaching and reflect the government's desire to promote cultural and social progress.

The prime policy objective pursued for the last 30 years has been the decentralisation of education; structurally, the general introduction of the *scuola media* as from 1985/86 takes the limelight; in teacher training, the new post-secondary teacher training college has taken over from the old-style training; and vocational training will continue to be a major concern, with the creation of new schools and the expansion of existing institutions.

Important changes have been made over the past decade in programmes and curricula, reflecting the will to improve the education system in line with today's expectations and the demands of technological change. The main measures adopted concerned improvement of pupil assessment instruments, the introduction of optional courses, the upgrading of teaching facilities and the creation of new services (vocational, secondary and university counselling, and support for teachers).

There are very many *pre-primary schools* (320 for the whole canton), attended by 98 per cent of all five-year-olds, 90 per cent of four-year-olds and 60 per cent of three-year-olds; 84 per cent of these schools, which are run by the communes, apply the continuous school day system.

For the five *primary school* years the 1984 curriculum and a timetable comprising 32 lessons per week have been adopted. The study of French begins in the third year of primary school; the curriculum leaves plenty of room for the social and affective side of education, and special attention is paid to smoothing the way for the move up from one level to the next.

The reform of *secondary I* education (*scuola media*) has been introduced in four stages and makes this level compulsory for all pupils between 11 and 15 years of age. The four years of *scuola media* are split into two cycles of two years each: the observation cycle (common-core syllabus, no selection) and the orientation cycle (common core with options and levels according to pupils' abilities and interests). The weekly timetable comprises 34 lessons; each year, some 5 per cent of the pupils have to stay down.

Post-compulsory education (*secondary II*) is provided at the high school, the cantonal School of Commerce in Bellinzona, the teacher training college, the cantonal School of Administration and the cantonal School for Social Work and Paramedical Professions. *Vocational training* in Ticino offers the opportunities common to all cantons.

Among the flourishing services are the school libraries (each school has one); the educational documentation centres (four for the canton collect, produce and circulate educational and didactic resource material); the Educational Research Service of the Department of Education (which keeps abreast of and assesses educational reforms and analyses the cantonal situation); and the *Radiotelescuola*, which broadcasts radio and television educational and information programmes in association with Swiss-Italian TV.

Ticino canton has no university. In 1986, the population rejected a proposal to set up a Swiss-Italian university centre. Ticino nevertheless plays an active role in Swiss university life, participating in pure and applied research via institutes working in Ticino, and contributing to the improvement of post-graduate lifelong education/training. Co-operation with universities in Northern Italy is also being considered, and it is by no means inconceivable that a university may one day be set up in Ticino.

The canton facilitates access to every kind of education and training by granting scholarships and student loans (SF 14.6 million in 1986/87).

To sum up, the future development of the education system in Ticino will be characterised by:

- the application of a new Education Act (which enlarges the role of parents and other partners in the business, educational and information worlds, defines the aims of the school, and emphasizes the importance of teacher training);
- a special efforts to provide in-service further training for teachers;
- special attention to co-ordination between levels (curricula, methods, administrative arrangements, etc.);
- more active participation by the partners in education (pupils, teachers, parents) in the management of schools.

EDUCATION IN THE CANTON OF VALAIS

Situated in the heart of the Alps, in a peripheral position, Valais is a bilingual canton (two-thirds French-speaking, one-third German-speaking), a close neighbour to central Switzerland by the Haut-Valais and turned towards French-speaking Switzerland by its opening on to Lake Geneva. The lateral valleys are obliged to find an uneasy balance between tourism, agriculture, industry and commerce, depending on the means of communication. For their education policy overall, the Valais has elected to look to the future, considering that trends in Western society are likely to offer the Alpine regions new opportunities in the "4th industrial revolution", with the take-off of the tertiary sector, high technologies and the leisure civilisation.

Specific features of the Valais education system are:

- compulsory education organised for grades 7, 8 and 9 in an open orientation stage (two sections in integrated classes, with streamed courses in the three main subjects);
- a structure in which secondary II starts in the final year of compulsory education and lasts five years up to *maturité* level;
- very rapid expansion of higher vocational training (five schools opened in two years: an ETS school, two schools of business and administration, a computer science technical school and — unique in Switzerland — the Swiss school of tourism).

In *pre-primary* education, which is largely the responsibility of the communes, flexible regional formulas have often been found. Current problems include transport facilities for pupils, which are not ideal, and finding ways of smoothing the transition from nursery to primary school.

Primary education in the French-speaking part of the canton, which lasts 6 years, aims at the objectives defined in the curriculum for French-speaking Switzerland in French, mathematics, environmental studies, artistic education and music. In the German-speaking part of the canton, intercantonal co-ordination with central Switzerland is the rule. But since co-ordination in the two parts of the canton does not move at the same pace, constant care has to be taken to ensure consistent cantonal policy respecting both cultures and languages.

Other problems at primary level include:

- the need to take account of the new provisions governing the orientation stage (grades 7, 8 and 9) so as to ensure efficient vertical co-ordination;
- the need to examine the new provisions regulating the pace of education. Compared with the rest of Switzerland, Valais has one of the heaviest annual timetables at primary level;
- the need to continue and improve early teaching of the second language, which begins in the third year of primary school;
- the need to continue the study on the introduction of computers in primary education (CAE).

The *orientation stage*, introduced by the Act of 16th May 1986, is based on the following principles:

- differentiated teaching (three streams: fast 2-year, average 3-year, slow 4-year); options to be kept open (counselling; optional subjects);
- more general recognition of parents' role (in certain decisions on courses to be followed);
- a greater role for teachers as educators and not only transmitters of knowledge;
- encouragement of cultural activities in all regions;
- choice for the communes between two types of organisation (two sections: secondary and general; or one section: integrated classes with streamed courses).

Special education in Valais is unusual in that administratively it is integrated with normal schooling, each administrative service being responsible for all of its pupils and an Office of Special Education co-ordinating the whole. Provisions include integrated teaching support, small classes, observation classes, adaptation classes and special schools. The aim throughout is to help young people to fit into society and working life, and although integration in ordinary schools is far from complete, priority is always given to keeping pupils there whenever possible.

Among the special services, the medico-pedagogical service (educational psychology and child psychiatry) works both on prevention and therapy with multidisciplinary teams which are increasingly becoming transdisciplinary.

At *secondary II* level, Valais is faced with the same problems as the other cantons and is taking an active part in the cardinal discussions at Swiss national level on core curricula for the *maturité* schools. As regards other secondary II education, the main issue is how to tie it in on the one hand with the needs of business and industry and on the other with the orientation stage. *Teacher training* is being reviewed and a plan is currently being considered. *Basic vocational training* is up to national standards and will not be discussed here, whereas the development of *higher vocational training* has been spectacular, five schools having been opened in a very short space of time.

Valais as a *non-university canton* attaches much importance to relations with all the country's universities and the federal polytechnic schools, relations that are not confined to financial arrangements alone, since a new type of two-way co-operation ought to be possible involving, for example, the provision of services by the universities, the development of new training/education fields and decentralised applied research. A high-level commission, "Valais-Universities", is currently considering these matters.

The Office of Research and Pedagogical Documentation (ORDP) carries out pedagogical research as well as assisting with organisation and supplying documentation, information and teaching resource material. Its monthly magazine, *L'école valaisanne*, publishes educational and administrative information and is a mouthpiece for teachers to voice their opinions.

Lastly, in 1986, sports and artistic activities classes were opened in Brigue and Martigny for young people who have completed their compulsory schooling. In these classes students can reach a high level of sporting or artistic attainment while working to obtain the official diploma in commercial studies (in 4 years instead of 3).

EDUCATION IN THE CANTON OF NEUCHATEL

Neuchâtel has a very long educational tradition. The number, nature and variety of its schools and colleges continue to reflect in lowland part of the canton, the usages of a meticulous education to suit the needs of city dwellers and, in the valleys and plains of the Jura, the thirst for learning and critical curiosity of mind shown by highland people. A principality ruled by the King of Prussia from 1707, the canton became an independent republic in 1848, and the first Education Act saw the light of day as far back as 1850.

The Constitution of 21st November 1858 gave the State supreme governance and general supervision over education; school attendance is compulsory and free of charge. During the last few years, most of the legal structure and regulations relating to education have been reviewed and both communal and cantonal responsibilities are now comparable with those of the other cantons.

Although enrolment is optional, 99 per cent of all 5 to 6 year-olds attend infants' school (*pre-primary* education).

Primary education lasts 5 years and its curricula are based on the reference documents adopted for French-speaking Switzerland as a whole. Specific issues arising at primary level include the introduction of the reformed French curriculum, the introduction in 1990/91 of the early teaching of German from 4th primary grade, the assimilation of a growing number of non-French-speaking pupils (foreign workers' or refugees' children), consideration of a new system of assessing pupils' work and the problems relating to the declining school population.

At the end of the 5th year, all pupils leave primary school and go into *junior secondary education*, which lasts 4 years, the last 3 of which (7th, 8th and 9th grades) being in specific sections. For the first time, in 1987/88, pupils leaving 5th primary grade went into the newly created orientation stage (6th year). This new system, which gives teachers much more responsibility, is intended mainly to facilitate the primary/secondary transition by making pupils feel secure, helping them make their choice and doing away with the inordinate role of the former "cut-off examination" and the heavy psychological pressure it brought to bear. After a year in operation, it seems that the new system is achieving its aims and has not changed the usual proportions entering the different streams. To be successful, this orientation year requires a particular kind of organisation which is sometimes difficult to achieve (responsibility for the class given to as few teachers as possible, not more than 18-19 pupils per class, time earmarked for help, etc.).

Subsequent to the orientation year, the *secondary schools* retain the usual streams. The structural differences are sometimes quite substantial since the schools (13 for the canton) vary in size between 110 pupils to over 1 100. Current issues include the new methods of teaching modern languages, assessment of pupils' linguistic skills, and equipping schools with computers and training teachers in their use; equal rights for boys and girls have been established (timetables, etc.); lastly, better vertical co-ordination between compulsory and post-compulsory education is being installed.

Vocational training reflects the importance of technical qualifications for the canton's economy (clock- and watch-making, precision engineering, high technology). In Neuchâtel a high proportion of young people go to high school. Hence a certain imbalance which affects business and industry in that it results in a shortage of skilled workers and a certain distaste on the part of the brighter pupils for technical school training. The business schools would like to have more funds so as to be able to renew their equipment more frequently.

High school education is organised in compliance with the ORM (Federal Order on the Recognition of *Maturité* Certificates) and prepares the pupils for all five standards of *maturité* certificates. Neuchâtel is one of the cantons which has the highest annual per capita proportion of *maturité* awards and it has been observed that, while the *maturité* traditionally opened the door to university study, more and more young people go into other kinds of study or into employment once they have passed it. Lastly, the ageing of the population in certain parts of the canton is beginning to raise enrolment problems here and there.

Primary and pre-primary teachers train at *teacher training college* (3 years after a *maturité* or other approved diploma), and secondary teachers at the teacher training centre (1 year, after obtaining a university degree). Further training – compulsory retraining and optional in-service training – is organised by each responsible administration. The creation of a common "all-level" institution is currently under consideration.

Although it has over 2 000 students, the *University* of Neuchâtel is still the smallest in Switzerland. It has four faculties (arts, science, law and economics, and theology) and has to make certain choices in order to operate normally owing to the burden it represents for cantonal finances.

Certain special activities should also be mentioned: teaching support (special education), educational and vocational guidance, sport, and the *Office Neuchâtelois de la Documentation Pédagogique* (ONDP). The latter supplies educational aids (books, leaflets, audiovisual aids, etc.); it also carries out research on the various types of education and promotes educational radio-television broadcasting and the preparation of resource material.

Neuchâtel's efforts to introduce educational reform and innovation have not been expressly referred to in preceding paragraphs; but they have in fact been very real for many years now (curricula, resource material, structural adjustment, regionalisation, etc.). Being neither too big nor too small, Neuchâtel, like many other Swiss cantons, can adapt its educational structures and objectives quite flexibly and often quite quickly to social and economic imperatives. This is not the least of the merits of the decentralisation of powers in the Swiss co-operative federal system.

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REVIEWS OF NATIONAL POLICIES FOR EDUCATION

SWITZERLAND

The Swiss education system is administered in a federal framework leaving the cantons a great deal of freedom to organise education and training. The country's highly developed vocational training and apprenticeship schemes are based on a partnership in which the authorities, teachers and business all play an active part.

But will the system that so far has made quality education and training possible suffice to provide the much more varied human resources that will be needed in the future? Education and training are still relatively compartmentalised, and teachers probably ought to be encouraged to be more mobile. All these issues are discussed in this first review of educational policy in Switzerland, which also recommends more co-ordination at national level in order to cope with manpower shortages and rise to the challenge of the single European market.

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